

Edward Hughes
1770

THE
ART of FARRIERY
BOTH IN
THEORY and PRACTICE;

Containing the
CAUSES, SYMPTOMS, and CURE of all DISEASES
incident to HORSES.

WITH
ANATOMICAL DESCRIPTIONS,
illustrated with CUTS,

For the better Explaining
The STRUCTURE, and accounting for the VARIOUS
DISORDERS of these useful ANIMALS.

AS ALSO
Many Rules relating to the Choice and Management of
HORSES of all Kinds, and useful Directions how to
avoid being imposed upon by JOCKIES.
Wherein some egregious Errors of FORMER WRITERS
are occasionally pointed out.

By Mr. JOHN REEVES,
Farrier at Ringwood, Hants.

The whole Revised, Corrected, and Enlarged by a PHYSICIAN.

To which is added,
A new Method of curing a STRAIN in the BACK SINEWS,
and the ANATOMY of a HORSE'S LEG.
With some Observations on SHOEING.
By an EMINENT SURGEON.

D U B L I N :

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M DCC LIX.





T O
HENRY COMPTON, Esq;
Of Bistern, ~~Hants.~~

S I R,



YOU are intitled, by the strongest claim, to my most grateful acknowledgments, and to the honest labours and studies of my life ; since you have not only encouraged me, by your generous services, but enabled me by your judgment to pursue them with Success.

DEDICATION.

The following Treatise is principally a collection of such Receipts and Observations as I have found by experience, to be most effectual in the cure of diseases in Horses, and which I have used with the greatest success; and, by means of this publication, I have some reason to hope that my labours, which have hitherto been confined to my friends in this neighbourhood, will be more generally extended, and become more serviceable to mankind.

Some apology should be made for offering you a Work so unworthy your protection; and indeed, I should not have presumed to request your encouragement of this performance, was I not well assured that your great goodness and condescension would forgive what might be impertinent in me to ask; and that any subject, however treated, if well and honestly intended, would not be overlooked, or despised by

DEDICATION.

by those who are fond of improvements, and are known to encourage every degree of industry and application.

These considerations induced me to prefix your name to this performance, which I most humbly submit to your known candour and judgment. Your acceptance of this work will incline the world to give it a more favourable reception, than I could otherwise expect, and induce the publick to think it has some little share of merit, besides that of a truly honest Intention.

The usual stile of a Dedication would ill suit one who cannot do justice to the character he would draw. Decency, therefore, as well as Inability, hinders me from saying any thing on the subject of your personal worth, in the language of my heart; but duty obliges me to make this public acknowledgment (which I do with the greatest thankfulness and gratitude) of the many
favour

DEDICATION.

favours you have so generously conferr'd
on,

S I R,

Your most obliged, and

Dutiful Servant,

JOHN REEVES.



P R E F A C E.

S.

TH E author of the following sheets having been many years in the practice of Farriery, and acquired reputation by his success in curing the various Diseases of Horses, several gentlemen in the neighbourhood solicited him to publish his method of cure; and in order to engage him in the undertaking, a physician of eminence offered to revise his copy, and prepare it for the press. These (with a consideration of the benefit mankind might receive from his labours) were the motives which induced him to commence author, and to undertake a task that people in his sphere of life may be perhaps thought little able to perform. Let that however be determined by the work itself, and by the benefit mankind may hereafter receive, by adhering to the precepts and medicines here recommended.

His friend the physician has not only performed his promise, but greatly exceeded it
by

P R E F A C E.

by adding such a just theory of Farriery, as will probably throw great light on the art, and lead men to a more rational practice; he has candidly, though at the same time very tenderly, pointed out the errors of other writers on this subject, and has also explained the operations of some of the medicines, and animadverted on the doses of others, and the nature and quality of the drugs.

Both our author and his friend have been intent on establishing such a system of Farriery, as might in all respects be depended on. They have excluded therefore such conjectures as are the children of fancy; all their precepts and prescriptions being founded on practice and experience.

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Of the EXTERNAL PARTS *of a* HORSE,
and their NAMES.

TH E first thing that offers itself to our view, is the *coat*, which is called the *hair*: This has different denominations in several parts of the body. The foretop, is the *topping*, or *tuke*: the hairs on the under-lip, are the *beard*: those which grow along the upper part of the neck, are called the *mane*: the part that is most arched, the *crest*; and when that sinks, a horse is said to be crest-fallen: the tuft of hair which grows on the lower part of the leg behind, above the heel, is termed the *feet-lock*, or *fetlock*: the hair that grows round over the top of the hoof, is named the *crown*, or *crowt*, or *crownet*, the hair on the eye-lids is the *brills*.

The usual term by which the body of a horse is distinguished, is the *carcase*: thus, a horse with a large body, is said to have a *large carcase*; when the body is compact and well made, he is said to have a *good carcase*. The forehead is often called the *brow*. The two hollows above the eyes, which are most remarkable in old horses, are termed the *eye-pits*. The mark which frequently runs down the face, is the *raché*: and the white spot in the forehead, the *star*. The back part of the head, where it joins to the neck, is the *poll*: and the juncture of the head and neck, the *onset* or *setting on of the head*. The lips, with the tip of the nose, form the muzzle. The place on the inside of the mouth where the tongue lies, is the *charnet*. The fleshy rows that

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run across the upper part of the mouth, and are very remarkable in young horses, are called the *bars*. The top of the shoulder blades, and highest part of the spine, at the setting on of the neck, is the *withers*; and from the top of this a horse is measured to know his size. From the withers to the hind part of the back, are the *reins*. Next the reins are the *loins*: though some call the whole extent, from the withers to the *croup*, the reins. The extremity of the reins, above the hips, to the tail, is called the *croup*. The part where the crupper lies is the *channel*; and the tail is the *dock* or *runt*. The sinking of the back, if any, is named the *sway*.

The hinder part of the belly next the genitals, is called the *flank*, which reaches from the small ribs to the haunches. The loose skin which covers the yard, is the *sheath*. The *belly* reaches from the brisket to the sheath. The point from the withers to the top joint of the thigh, inclosing the whole breast on both sides, is called the *shoulder*. The *fore-legs* or *arms* begin from the shoulder; and the hind part pointing towards the brisket is the *elbow*. The middle joint is the *knee*, to which the fore leg or arm reaches. The extent from the knee to the pastern, is called the *shank*; and the strong tendon behind the shank, which is inserted into the heel, is termed the *back sinew*. The place where the shank joins the pastern, is distinguished by the *pastern* or *set-back joint*. The *pastern* reaches from the lower part of this joint to the foot, and has a joint in the middle to facilitate the motion of the foot, which distinguishes it into two parts, the *great pastern*, next the shank, and the *lesser*, next the foot. The joining of this last with the foot, is called the *coffin joint*.

The *hoof* is by some called the horn, but most commonly the *coffin*, because it incloses the bone of the foot. The tender part of the hoof next the heel, has the name of the *frush*; and the ball of the foot, the *frog*. Tho' some give the same denomination to both; and the frush or frog rises from the middle of the foot, and reaches to the heel. The *soal* is that horny part which covers the rest of the bottom of the foot, and adheres to the verge of the hoof, where nails are driven when a horse

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a horse is shod. The sides meeting on the heel, are called the *quarters*.

The *baunches* begin at the two bones of the back part of a horse, which inclose the loins, and descend to the *ham* or *hock*, or *bough*. The *stifle* is the *knee-pan* of a horse, seated in the middle joint of the thigh; and is outwardly that part which sets out from the thigh towards the belly. The *thigh* or *gascoin* begins at the stifle, and reaches to the bending of the ham or hock. The *ham* or *hock* is the bending of the hind leg, and the round knob behind is called the *heel of the hock*, in which the great matter sinew is inserted. The small of the hind leg has the name of the *inslep*. The pasterns and feet are distinguished in the same manner as in the fore legs, and need no other description. That side of a horse which we approach in order to mount him, is called the *near side*, and the other the *off-side*. Hence come the terms of *near-foot* and *off-foot*, the *near-eye*, and the *off-eye*, and so of the rest.

The method of determining with certainty the AGE of a HORSE.

THE age of a horse may be determined in various manners; and this is a circumstance that ought to be well considered, that you may not be deceived in the purchase of a horse: not only because a young horse is more serviceable than one that is old, and is much more fit for any kind of use; but because it is necessary to adapt the remedies to his age; for what is proper for a young horse, is not always suitable to one advanced in years.

This knowledge is principally from the teeth. Now the first teeth that appear are four; two above, and two below, which are called the foal-teeth; which may be readily distinguished from others by their whiteness. There are others which come out afterwards, till they are twelve in number; that is, six above, and six below. When a colt is between two years and a half and

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three years old, he casts four of these teeth, two above and two below. These are called nippers or gatherers, and are much stronger and larger than the foal-teeth. With these he nips off the grass, and pulls the hay from the rack. When these are compleat, a horse is three years old ; some say three years and a half.

When he is about four, he casts again two above, and two below ; one on each side the nippers or middle teeth. So that now he has no foal-teeth remaining but the corner teeth ; and hence you may judge he is about four years old. The tusks appear next after these, and sometimes before ; but do not succeed the casting of teeth as the former. They are a little crooked, like the tusks of other animals ; and in young horses they have a sharp edge all round the top, and on both sides, the inside being a little hollow. Those below come out before those in the upper jaw.

In the war time, when dealers want to sell their horses, they endeavour to make them seem older, by pulling out their foal-teeth before their time ; in this case, the tusks will not appear so soon after the others, as they would otherwise have done. Therefore, the surest way to know the age at this time, is from the tusks, which at four years old are very small. When all the colt teeth are cast, and the corner teeth begin to shew themselves, then the horse comes five : Or rather, in the spring before he is five, the corner teeth begin to appear just equal with the gums, and are filled with flesh in the middle.

From five, to five and a half, the corner teeth remain hollow within, and are not quite filled up till the horse is six, and then the tooth becomes almost flat, and is equal, as well on the inside as outside ; whereas before this time, that is, a little after five, it did not rise above the gums more than the thickness of a crown piece. At five and a half, they are about a quarter of an inch high, and when he is full six, near half an inch.

When a horse is six years old, you need only examine the corner teeth and the tusks. The part of the corner teeth that had flesh in at first, turns to a brownish

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brownish spot, like the eye of a garden bean. At seven, the mark or spot becomes faint, and of a lighter colour; likewise the tooth becomes more even. At eight, it quite disappears; though sometimes there remains somewhat of it two or three years more; which may deceive the unskilful. A horse that feeds upon dry meat only, will appear more old than one that is often at grafs, because the teeth are more worn away by the former.

The longer the corner teeth are, the older is the horse; and, what is worthy notice, they are apt to be foul or turn yellow. When the mark is gone, if you touch the tusk in the upper jaw with your finger, and find it worn away and equal with the palate, you may certainly judge the horse is ten years old at least. The same may be concluded when the tusks in the lower jaw are long, round, blunt and foul.

When the flanks of a horse are much sunk, the feet broken and spoiled, the pace bad, and the eye-pits very hollow, you may certainly conclude the horse is very old. His gums are likewise worn away, and leave the teeth long and naked, which are either yellow or brown. The bars of the mouth are lean, dry and smooth, with little or no rising. Black horses are apt to grow grey over their eye-brows, and very often over a good part of the face. All horses, when very old, sink more or less in their backs, their joints grow stiff, and their knees and hocks bend, insomuch that they are apt to trip and stumble in going down a hill or any small descent.

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THERE is no man, tho' never so well versed in the knowledge of a horse, that is able to distinguish all his faults at the first view. Some things stand in need of examination more than once, otherwise there may be very essential mistakes committed.

The thighs and legs should be clean, and free from every kind of blemish. The knees should be straight,

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not bending: the shin and shank thin: the back-finews strong, and well braced. The finews and the bone should be evidently distinct, in such a manner, as to make the legs appear thin and lathy, not full and round. The pastern joints should be free from disorders of all kinds, never large and round, for then they may justly be suspected. Nor must there be any swelling near the coronet. The hocks should be lean and dry, not puffed up with wind; which you may know by laying your finger upon it, for the swelling will readily change its place.

With regard to the *hoof*, the coronet should be equally thick, the horn shining and greyish. When the horn is white, it is a sign of a bad foot, that will wear out in a short time. A thin, weak foot, that is, when the horn is thin, is liable to be spoiled in shoeing, and by travelling hard on stony grounds, by droughts in hot seasons, and by too much moisture in winter. The thinness of the horn will best appear when the shoe is taken off; for the verge all round the foal will appear thin, and the horse will wince at the least touch of the pincers. But as this is generally not permitted, you may conclude the same when the shoe nails are driven high to take sufficient hold. The heel and frog likewise often are very tender to the touch, and sometimes one point of the heel will stand higher than the other.

A *strong foot* has the fibres of the hoof very distinct, running in a straight line from the coronet to the toe, like the grain of wood. Some such feet will last very well, if care be taken to keep them moist and pliable: yet if they are neglected when the horse travels much, especially on stony grounds, or when he stands long in a hot, dry stable, they will be apt to go tender and lame, when there is no apparent defect in the foot. This happens from the foot being bruised by the hardness of the hoof.

The greatest inconvenience attending a hard strong foot, is its being subject to rests and fissures, which cleave the hoof quite through, sometimes from the coronet down to the bottom. These clefts being for the most part in the quarter, seldom admit of any other remedy,

medy, than extirpating the whole piece that lies next the heel.

A *narrow heel* is likewise a defect; though some horses feet are tolerably good when their heels are narrow, unless the foot is hot. When the heel is not above two fingers in breadth, the foot is bad. Both the feet should be of an equal size, and not flat or without depth. But if such a foot happen to be strong, the hoof smooth, the sole firm, and the frog not decayed, rotten, or fleshy, the horse will then endure the roads tolerably well. But when it is like an oyster, with many rings or wrinkles, at the same time that the sole is soft, and the frog fleshy and spongy, it is a very great fault.

The heel should neither be too high nor too low. A high heel causes a horse to trip and stumble often, and to go unsteadily. And low-heel'd horses, with very long, yielding pasterns, are very apt to have their heels worn quite away on a journey.

When the foot is too large in proportion to the rest of the body, though good in other respects, such a horse, at best, will be weak and heavy, as well as unapt for brisk, vigorous actions.

The hind legs should be free from the same defects as the fore legs.

The *head* of a horse should be small, at least not too long nor too large, rather lean than fleshy. The ears should be small, erect, thin, sprightly, and pointed. His forehead or brow should be neither too broad nor too flat, with a star or snip. His nose should rise a little, and be well turned: his nostrils wide, and then he will breathe more freely. His muzzle should be small, and his mouth should neither be too deep nor too shallow. His jaws should be thin and sufficiently wide, not approaching too near together at the throat, nor too high upwards towards the onset, that he may have sufficient room to carry his head in an easy, graceful posture. The eyes should be of a middle size, bright, lively, and full of fire. The eyes are the index of the mind, and discover, in a great measure, his inclination, passions, and indispositions.

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The *tongue* should be small, that it may not be too much pressed by the bit. The *bars* should be sharp, ridged and lean, and then he will be more easily governed by the bridle. It is a good sign when a horse has his mouth full of white froth; for it shews that he will not easily be overheated.

The *neck* should be arched towards the middle, arising by a beautiful gradation out of his breast and shoulders, diminishing as it approaches towards the head; the muscles should be distinct, and not too full of flesh. But this is no fault in mares, because their necks are commonly too fine and slender. The hair of the mane should be long, thin, and fine; if it be a little frizled, so much the better.

His *shoulders* should be thin from the withers, and pretty long and well raised, with a gradual enlargement from thence downward, so as to render his bosom or breast neither too narrow nor too gross. A thick shouldered horse is not only disagreeable to the rider, but he sooner tires, and trips or stumbles every minute; especially if he has a thick, large neck at the same time.

When the breasts of horses are so narrow, that their fore thighs almost touch, they are worth little; for they have a weak fore hand, and by crossing their legs are apt to cut; likewise in galloping they are subject to fall. A horse of a middle size should have the distance of five or six inches between his fore-thighs. And when he stands straight upon his limbs, there should be less distance between his feet than between his thighs near the shoulders.

The body or carcase should be of a middling size, in proportion to his bulk; for when it is too small, the horse is generally weak. His back should sink a little below the withers; but the other part should never be too low, but always straight, unless as just mentioned. In this case, the forehand will rise very well.

When the back of a horse is higher behind than before, he is apt to be pinched in his shoulders, is very unsightly, and generally weak. Besides, it renders the back-parts so heavy, that they generally have an awkward gait, and move slowly. A horse should be home-
ribbed;

ribbed ; but the short ribs should not approach too near the haunches, for then he will not have room to fetch his breath. Those that are open ribbed, are of a lax texture, are loose in the flanks like a greyhound, and consequently weak. Besides, they are narrow over the chine, have little or no belly, are not fit for a long journey, and will carry no great weight.

When a horse's back is very short in proportion to his bulk, and yet otherwise well limb'd, he will hold out well enough upon a journey ; but he is slow, and never makes a good appearance. When he is tall at the same time, with very long legs, he is worth little. His flanks should not be hollow, but smooth and full: likewise his hind parts, or uppermost haunches, should not be higher than his shoulders : and when his back is a little arched behind the saddle, it is a sign of strength, and a fitness for hunting as well as travelling.

The WIND should never be overlooked in the choice of a horse. When he is broken-winded, it must be after he is seven or eight years old, and may be easily known by his flanks, when he stands quiet in the stable ; for he always pinches them in with a very slow motion, and then drops them suddenly. When he is very bad, he has a violent cough, and farts frequently, with a constant working of the fundament. His nostrils likewise work as in a fever ; and yet he has no great heat or much abatement in his appetite.

A *thick winded horse* fetches his breath often, and sometimes rattles and wheezes. This may be always discovered by putting him to brisk exercise. This defect is sometimes accidental, as when a horse is foggy or foul fed, or is newly brought home from a rank pasture, or has had a cold that has injured his lungs. When it is natural, it may be owing to a narrow chest, or when he is ribbed home too close.

I need say nothing of the *glanders* in this place, nor many other evident defects and diseases, because none but ignorant buyers can overlook these, when any such horses are offered to sale.

The TEMPER of a horse is a principal thing to be observed, but is not very readily known unless to such as

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are greatly accustomed to their tricks. However, there are signs by which their dispositions may be pretty well distinguished; for a *vicious horse* generally lays his ears close to his poll, shews the whites of his eyes, and looks fullen and dogged. Some have a frowning look, and carry anger in their countenance, which may readily be discovered by those who have had frequent opportunities of observing them. They seem to stand in a posture of defence, holding up their heads very high, and advancing one of their hind legs forward, which they rest on their toe; as it were preparing to kick the person that comes near them. When a horse is very vicious, he pays no regard to the groom that feeds him, nor puts on a more pleasant countenance.

However, some horses that are ticklish, will lay back their ears, but they have a pleasant look with their eyes, and catch hold of the crib. Some do the same from a playful disposition.

A horse that is fearful, and apt to start, often endangers the rider's neck. It is a disposition seldom vanquished till he is old and useless, or harrassed by constant travelling, which renders all kinds of objects familiar. But this will be no absolute security, if any unusual sight should appear. This temper may readily be discovered by his crouching, creeping and starting.

A *hot, fretful horse*, is never able to endure any fatigue, for he is soon spent, and unfit to perform his task. A long journey will deprive him of his flesh, and make him appear like a jade, only fit for the dogs. Long rest may restore him so as to be able to undergo another. But such as these can be of no long duration; for they are liable to many accidents and diseases. A horse of this kind will discover his fretful temper as soon as he gets out of the stable, and will not leave it off till he has lost his spirits.

The temper of a dull, heavy, sluggish horse is hard to be disguised, whatever tricks may be made use of to put him in spirits. Some use sharp spurs, others endeavour to rouse him by the cracking of the whip, and others again place some prickly thing under his tail. But

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any of these only put him into a hurry, without concealing his natural disposition, as a good judge will readily perceive. However, such horses as these will last long, and may be very useful for some sort of work.

There are other horses which may be called *crib-biters*. These catch hold of the edge of the manger, suck in the air and gulp it down till they are sometimes ready to burst. This vice is readily discovered, for he will do it openly in the stall. Likewise his fore-teeth will appear to be much worn; and if he has been long used to it, they will not meet in some places by the breadth of one's finger. Coach-horses are much given to it, and can never be made to leave it off. Crib-biters are of little value, for they almost always look lean and jaded, with a staring coat; they are unfit for labour, are subject to the gripes and other diseases.

Upon the whole, it is not sufficient that every single part of a horse, when taken to pieces, should be well formed, beautiful and free from blemish, but he should make a good appearance when taken altogether, and every limb should have a just symmetry and proportion with regard to all the rest. When this is the case, little trifling defects are of no moment, especially when a horse's motions are easy and graceful, and all his paces sprightly, just, and regular.

The colours of horses are greatly diversified; but the chief are the *bay*, the *chestnut*, the *brown*, the *black*, the *dapple grey*, and the *sorrel*. As for the white, it is not an original colour, but proceeds from the grey, which turns soonest to a white the lighter it is; especially if it has little or no dark mixture about the joints.

A *bright bay horse* has commonly a reddish dash; his mane and tail are black, with a dark or black list down his back. He has a pleasant agreeable shining aspect. A dark bay horse has his knees and pasterns almost always black. And some sorts are black from their knees and hocks downward. Those that have no list down their backs, are generally black over their reins, which changes gradually from dark to light towards their belly and flanks. Bays in general are accounted a good colour,

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lour, unless they meet with any bad accidents while they are very young.

The hairs of *chestnut coloured horses* are at the points of a pale brown, the middle is dark, and the roots of a light colour. The mixture is not very distinct and apparent to the eye; and many have their manes and tails very near the colour of their bodies, with but little white about their legs, and commonly no mark. Whereas the hair of the *sorrel* is often composed of several colours intermixt, wherein the fox-colour is generally predominant, with a good deal of white about their legs and pasterns. Many have a large blaze, and others are quite bald all over the face, with manes and tails of a sandy or flaxen colour. There are different degrees of both these colours. Some chestnut horses have manes and tails as light as the sorrel, while the hair of their bodies is of a fallow colour, stained with a kind of a beautiful chestnut.

The chestnut horse is generally preferable to the sorrel, unless the former happens to be bald or party-coloured, or to have white legs. A sorrel horse that has much white about his limbs is apt to be more faulty in his feet, and of a more tender constitution, than those that are of a more uniform colour.

Brown horses are sometimes very dark, and sometimes more light, and have almost always black manes and tails. Their joints are often of a rusty black. They are almost all of a lighter colour towards their bellies and flanks than elsewhere; and some are light about their muzzles. Those of this colour that are dappled, are accounted much handsomer than the rest.

Horses of a shining black, that are well marked, not having too much white, are in high esteem for their beauty. A star or blaze, or white muzzle, or one or more feet tipped with white, are thought to be rather better than those that are entirely black; as being generally less stubborn, and of a sweeter temper. Black horses that are brownish on the flanks and hips, with brown muzzles, are called *black browns*, which are generally of a good constitution. When their muzzles are of a lighter colour, they are said to be *meally mouthed*. Those that

that have a white circle round their eye-lids, have their fundaments often white, and have the appellation of *pigeon-eyed*. Bays and chesnuts are often more hardy than large black horses of the English breed.

Of greys, the *dappled* are accounted the best. The *silver greys* make a beautiful appearance, and often prove good; the *iron-greys* with light manes and tails, are not thought to be so hardy. All greys turn white in process of time; but the light plain greys, and the pigeon-coloured greys, sooner than others; and the dappled grey last. The *nutmeg-grey*, when the dappled parts incline to bay or chesnut are said to be good hardy horses.

Roan horses have a diversity of colours mixt together; but the white is more predominant than the rest. When there is a mixture of the bay or nutmeg, it renders them of an aspect agreeable enough. Some of these roans look as if they were powdered; and some as if milk was thrown on their buttocks. Some seem to be sprinkled with pot lamp-black, and some as if their faces had been dipt in a bag of foot. They are generally hardy and fit for the road. Some are exceeding good.

Strawberry-coloured horses are somewhat like the roan, but most resemble the sorrel. They are often marked with white on the face and legs, but not without a mixture of the roan. When the bay is blended with it, they seem to be tinged with claret, and this is looked upon as a very high colour, but is not common. Some of this sort turn out to be good horses.

The *dun*, the *fallow*, and the *cream-coloured horses* have a list down their backs, and their manes and tails are black. The list of the *dun* and *lead-colour* becomes lighter gradually, like the back of an eel; whence they are said to be eel-backed. Dun horses are very seldom chosen, and yet they may be very useful for country farmers. The *fallow* and the cream-coloured horses, are in higher esteem, as well for beauty as use; especially if their muzzles and joints are black, as well as their manes and tails; some have these last of a silver colour, without any abatement of their goodness.

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The fallow and the tawny duns are often shaded with a darker colour, or are faintly dappled, and when they are well matched, make a fine appearance as coach-horses.

Some horses are distinguished by a peach-colour, the starling and the flea-bitten: but these partake of the colours already mentioned, to which they may be referred. Some again are finely spotted like leopards or tygers, or deer, with gay colours, as yellow, red, &c. with black; on which account they are a great rarity, and are chiefly put into the hands of great men on that account. Others are so strangely bedaubed with a disagreeable variety of odd colours, that they are generally made drudges of, as being fit for nothing else.

The *marks* of a horse are by some regarded in a superstitious manner, being supposed to be lucky or unlucky, or at least to denote their good or bad qualities. But this has no foundation in experience. However, when a horse is well marked he is certainly more beautiful, and has more sprightliness and vivacity in his aspect.

The most common mark is a *star*. And when the white descends from thence pretty broad towards the nose, it is called a *blaze*. When there is a smaller line which proceeds from thence in the same manner, it is said to be a *snip*: and when the greatest part of the horse's face is covered with white, he is said to be bald. A star is never beautiful unless it be of a moderate size; nor is that face becoming which is all over white descending to the bottom of the cheeks. A *snip* should always be straight, for when it is awry, it is disagreeable. When stars or blazes are fringed with black hairs, as in some of the browns, they look pretty enough; but then their faces soon grow grey, which gives them an old look. But it is otherwise with the greys and sorrels, who generally have their stars and blazes fringed with their own colour.

The *marks on the feet and legs of horses* generally correspond with those on the face. Bald horses have generally much white on their legs, and they are often all white.

white. Horses with large blazes are commonly marked in the same manner. These are not unbecoming : but a horse with little or no mark on his face, looks disagreeably with white legs, especially when the white rises higher than the fetlock. A bald-faced horse, or one that has a blaze, with his feet intirely of another colour, is thought to be badly marked. And so is a horse that has both his near-feet white, as well as those that have both the off-feet white, while the rest are not marked at all. Some dislike a horse when the near-foot before is white, and the off-foot behind, and the contrary. According to the common opinion, those are best marked who have the near-foot, or both feet behind white ; or when the near-foot, or both feet before are white : especially when the horse has a radiated star, or a small blaze on his face.

When the white parts about the feet are indented with black, or any other colour towards the coronet, or when the coronet is spotted like ermin, the feet are looked upon to be good. When all the four legs are white, especially if it rises above the knee, or hocks, and when the pasterns and hoofs are white likewise, it gives the horse an ugly appearance, inclining too much to the pygmal. For which reason, few gentlemen will choose to ride them.

Some horses that have short hair, and are finely coated, especially those that are ungelt, have a mark like a feather. Sometimes it is round, and sometimes long and narrow, like a feather, or an ear of barley. The round is often on the forehead ; sometimes on the shoulders and brisket, looking like embroidery. When this mark is on the neck, it is placed immediately under the mane, and runs downwards towards the withers. When it is on both sides the neck, so much the better. Sometimes they are on the thigh, running down towards the dock, and sometimes down the fore-arm, or in other places. Feathers in general are almost always the sign of the goodness of a horse, and sometimes make an exceeding beautiful appearance.

Of the ANATOMY of a HORSE.

THE body of a horse, as well as that of all other animals, is divided into SOLIDS and FLUIDS, which act upon each other. From this action, when it is reciprocal, and performed in a natural and due manner, the several functions are produced, without which, an animal cannot perform the various operations for which nature has appointed him.

Of the SOLIDS.

THE *solid parts* consist of a mass of various pipes and vessels, which serve to contain the several fluids and liquors, which serve for several purposes, according to their distinct natures. All these vessels have a general tendency to contraction, which brings their sides nearer together, and diminishes their diameter. This quality of the vessels is called elasticity, which when of a proper strength, that is, neither too high nor too weak, has a great influence in preserving health, and keeping off diseases.

However, all the vessels are not of the same consistence; for some are hard, as the *bones* and *cartilages*. These serve to sustain the other parts, and give a firmness and attitude to the body. The soft parts are *muscles*, *skin*, *bowels*, &c. The solid parts are divided into the *similar* and *simple*, and the *compound* or *organic*.

The *similar parts* are the *fibres*, the *membranes*, the *bones*, the *ligaments*, the *muscles*, the *tendons*, the *aponeuroses*, the *glands*, the *blood-vessels*, the *nerves*, and the *common teguments*.

The *fibres* are long, slender threads of different kinds. Some are soft, flexible, and a little elastic or springy. These are hollow like pipes, or spongy and full of little cells, such as the nervous and fleshy fibres;

fibres ; others are more solid and flexible, with a strong elasticity or spring, such as the membranous or cartilaginous ; another sort are hard and inflexible, as the fibres of the bones.

A MEMBRANE is a flexible web of fibres, crossing each other in the same plane. Their fineness depends on that of the fibres, and their thickness on the number of their several planes. When these cover the vessels, they are called *tunics* or *coats*. Their use is to line the principal parts of the body, to constitute veins and arteries, as well as to cover the bones.

The BONES are the hardest parts of an animal body. The substance of the bone is a texture of solid fibres, differently disposed according to the conformation of each bone. They are composed of three substances ; the one is *compact*, as the external part of the bone ; the other is *cellular*, as the extremities of the long bones ; the third is *reticular*, and is formed of slender threads, which proceed from and cross the spongy substances. In the flat bones, as the skull, there is no reticular substance.

The oily substance in the cells of these bones is called MARROW, as well as that in the cavities of the long bones.

The CARTILAGES or GRISTLES are white, smooth, polished, supple, elastic substances, without cavities and marrow. They are harder than the other parts, but not so hard as bones. They cover the extremities of the bones at the joints, serving to unite them more closely, and to abate the friction. All the cartilages of the joints are covered with a membrane called PERICHONDRIUM.

The LIGAMENTS are white, fibrous, close compacted substances, which are more supple and more pliant than the gristles ; are hard to break, and cannot be extended or stretched without great difficulty. They serve to tie the bones together, as well as to bound and preserve certain parts.

The MUSCLES are masses or bundles of reddish fibres, and are covered with their own proper membrane. The extremities of the muscles are generally terminated with white,

white, slender, compact fibres, which form a round body called a *tendon*. When they are dilated into a thin, flat, and broad kind of membrane, it is called an *aponeurosis*. The red, soft parts of the muscle are commonly called *flesh*. Their action consists in contracting the fibres.

The GLANDS are little bodies formed by the texture of fibres of every kind, and are covered with a membrane. Those that separate any fluid from the blood, as the kidneys, are called *conglomerate*; those that serve to perfect the lymph are termed *conglobate*: thus the glands of the groin, armpits, &c, are *conglobate glands*.

With regard to the BLOOD-VESSELS, the ARTERIES, and the VEINS; the *arteries* are elastic tubes which proceed from the heart, from whence they receive the blood, and convey it to all the parts of the body. The *veins* are only a continuation of the last division of the arteries, and return the superfluous blood to the heart. The arteries have two motions, the one of dilatation, called the *diastole*; the other of contraction, termed the *systole*. These opposite motions form the *pulse*. The veins have no sensible motion; but they contain *valves* at certain distances, which hinder the blood from returning back.

The LYMPHATIC VESSELS are divided into arteries and veins: The *lymphatic arteries* are small transparent vessels, which convey an aqueous fluid, called *lymph*, to all the parts of the body. The *lymphatic veins* are only a continuation of the arteries of the same name, which carry part of the lymph back to the blood.

The LACTEAL VESSELS are a kind of lymphatic veins, because tho' they receive the chyle from the intestines, yet they are full of lymph when that fluid is absent.

The NERVES are white cylindrical cords, which proceed from the brain and spinal marrow. They have a covering from a membrane of the brain, called the *dura mater*, and are distributed into all parts of the body, and convey a fluid called the *animal spirits*, which are the principle of motion and perception.

The

The ADIPOSE MEMBRANE is placed on the internal surface of the skin, and is a texture of very fine membranous leaves, in which are an infinite number of cells filled with fat, which communicate with each other.

On the outside of the hide or skin, is the *hair*, which serves for cloathing, defence and ornament. It lies thicker and smother on the young horses than the old.

The SCARF-SKIN is the uppermost cover of the hide, all over the body, through which the hair grows. This is the part that rises in bladders after blistering or burning. It serves to defend the *nervous papillæ* from the immediate action of external bodies; whose impression would be too painful without it.

The SKIN OR HIDE, I mean that part of it properly called the skin, is composed of membranous, tendinous and nervous fibres, and is full of vessels. On its external surface are small glands, whose excretory ducts open on the external surface, and serve to carry off the sweat. On the outward part are the *pyramidal papillæ*; these are small eminences which are extremely sensible, especially in any part where the scarf-skin is off.

Of the FLUIDS.

BY *fluids* we are to understand that humour contained in the solids which compose the human body; the principal of which is the *blood*. All the other fluids proceed from hence, except the *chyle*, from whence the blood itself is formed; and therefore we shall speak of that first.

The CHYLE is a milky fluid, extracted from the aliments by means of digestion. It is made sooner or later, according as the horse's stomach is stronger or weaker. It consists of several fluids, viz. of the liquor that is expressed from the salival glands to dilute the food in chewing; of the liquor proceeding from the glands of the *æso-phagus* or gullet; of the liquor of the stomach;
of

of the pancreatic juice ; of the gall, and the fluids that proceed from the small intestines.

The BLOOD is a fluid that no animal can be without ; because it supports life and the strength of the body ; for when the vessels are emptied of it, all the operations of the mind and body cease. When the blood is let out into a vessel, as soon as it is cold, it coagulates and separates into two parts, whereof one is red and like a curd, and the other is fluid and serous.

Some of the fluids which are separated from the mass of blood, are mixt with it again ; such as the *fat*, the *synovia*, the *animal spirits*, &c. Some are carried entirely off, as the *urine*, the *matter of insensible perspiration*, and *sweat*. Another sort again are between, both the former, part of which is thrown out, and part returns into the blood again ; such as the *saliva*, the *pancreatic juice*, the *bile*, &c.

Of the BONES, CARTILAGES, and LIGAMENTS.

THE bones of a horse's head are seventeen in number ; which are as follow : The *bone of the forehead* : this in colts is divided by a future or seam down the middle, which wears out in time. The two *parietal* or *side-bones* : these are divided by a future which reaches along the middle of the head, from the forehead to the noll bone seated on the hind part of the head. All the bones of the head, except the temporal bones, are joined together by futures indented into each other, as in most animals. The temporal bones are united together by apposition, and to circumambient bones by a kind of gummy cement. They are thick and very hard in the middle and lower part, but are thinner above especially round their upper edges. The bones of the upper jaw are the *wedge-like bone*, the *jugal bone*, and the *sieve-like bone*. The other eight belong to the ear, four on each side, and form the organs of hearing.

The *wedge-like bone* is joined before to the frontal bone, and behind to the lower part of the occipital or noll bone, making the bottom or basis of the skull.

The

1, 2, 3, 4, &c. The 18 Vertebrae of the Thorax & Back.

Head Bones A

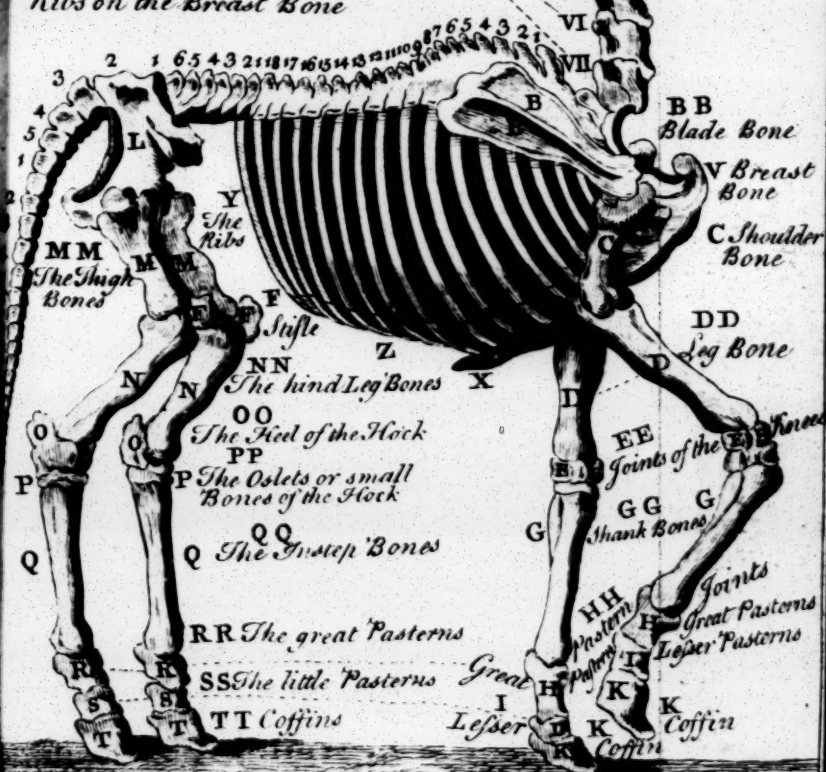
The 7 Vertebrae of the Neck

I II III IV V VI VII

L The Hip Bones

X The Swordlike Cartilage

Z The Cartilaginous endings of the Ribs on the Breast Bone





The *sieve-like bone* divides the nostrils, and gives a passage to the several nerves or vessels which are subservient to the senses of seeing, hearing and smelling. There are several cavities in this bone filled up with spongy flesh.

The *upper jaw bone* is joined to these, and has a little process, which forms a part of the orbit of the eye. The cheek bone is part of this, and has a hollow below the eye on each side, which is divided by four boney portions that open into the nose. There is likewise a little hole on each side, through which a pipe passes, to carry off the superfluous moisture from the glands at the inner corners of the eyes. When these are stoppt, it occasions the distemper called the *barw*. On the lower part are the sockets of the teeth, which with the tusks are twenty, *viz.* six fore teeth, and twelve grinders or double teeth, that is, six on each side.

The lower jaw is moveable, and is articulated into the lower part of the temporal bone. It is round and smooth on the lower edge, and hollow within, containing cells filled with marrow; the middle or flat part is more solid. The sockets of the teeth are the same in number as in the upper jaw.

Several blood-vessels pass through the seams of the skull, and through holes and perforations in several parts of the skull: these carry the blood to and from the brain and its membranes. There are likewise several passages for the nerves, all which are best seen in the skull of a horse.

There are several impressions and furrows on the inside of the bones of the skull, and which are made by the arteries of the dura mater, a membrane that enwraps the brain. When the bones of the skull are quite grown, no common saw will touch them; by which means a horse's head is well defended against external injuries, unless it be towards the nose, for that part consists of more spongy bones and cartilages, which are extremely sensible and tender.

The bone of the tongue is like a Greek γ , and serves for the insertion of the several muscles of the head or palate and wind-pipe.

The *vertebræ* or bones of the back are thus numbered: The neck has seven, the back seventeen, the loins seven, the croup six, and the tail eighteen. The spines of the bones of the neck are round and smooth, with a hollowness between them on each side. The uppermost has a process which is received into the second, and on which the head turns as on a hinge. The seventeen joints of the back have very high spines, especially on the withers, which rise arch-wise, and are united by a strong ligament. The spines are shorter along the withers, till they approach the loins, where they rise higher. But behind they are more level as they approach towards the rump. All these have large holes, through which the marrow of the back passes from the brain to the rump. The bones of the tail are not perforated, being without marrow. They are spongy, and joined together by soft gristles. They are largest at the rump, and lessen gradually till they end in a point,

The *collar bones* are one on each side, shaped like an *s*. They are united at one end to the upper part of the breast bone by little heads which enter into the cavities, and to the uppermost rack-bone of the back. They serve to support the blade-bones, and to keep them from sliding forward.

The *ribs* are distinguished into the true and false, and are 34 in number. The true are nearest the shoulders, and are nine in number on each side, which are joined to the rack-bones of the back. The bastard or false ribs are eight on each side: they are not so hard and strong as the true ribs, and grow shorter as they approach towards the flanks; they are all thick towards the back, but thin and flat on the other end. When the ribs are large in compass, a horse's belly looks more round; but when they are short, a horse's belly has not that aspect which gives a general satisfaction, nor does the animal breathe so freely. They are very smooth on the inside, being covered with a membrane extremely fine.

The *breast bone* is shaped somewhat like the bottom of a ship, and has cartilaginous dents where it receives the lower end of the true ribs. That part next the pit
of

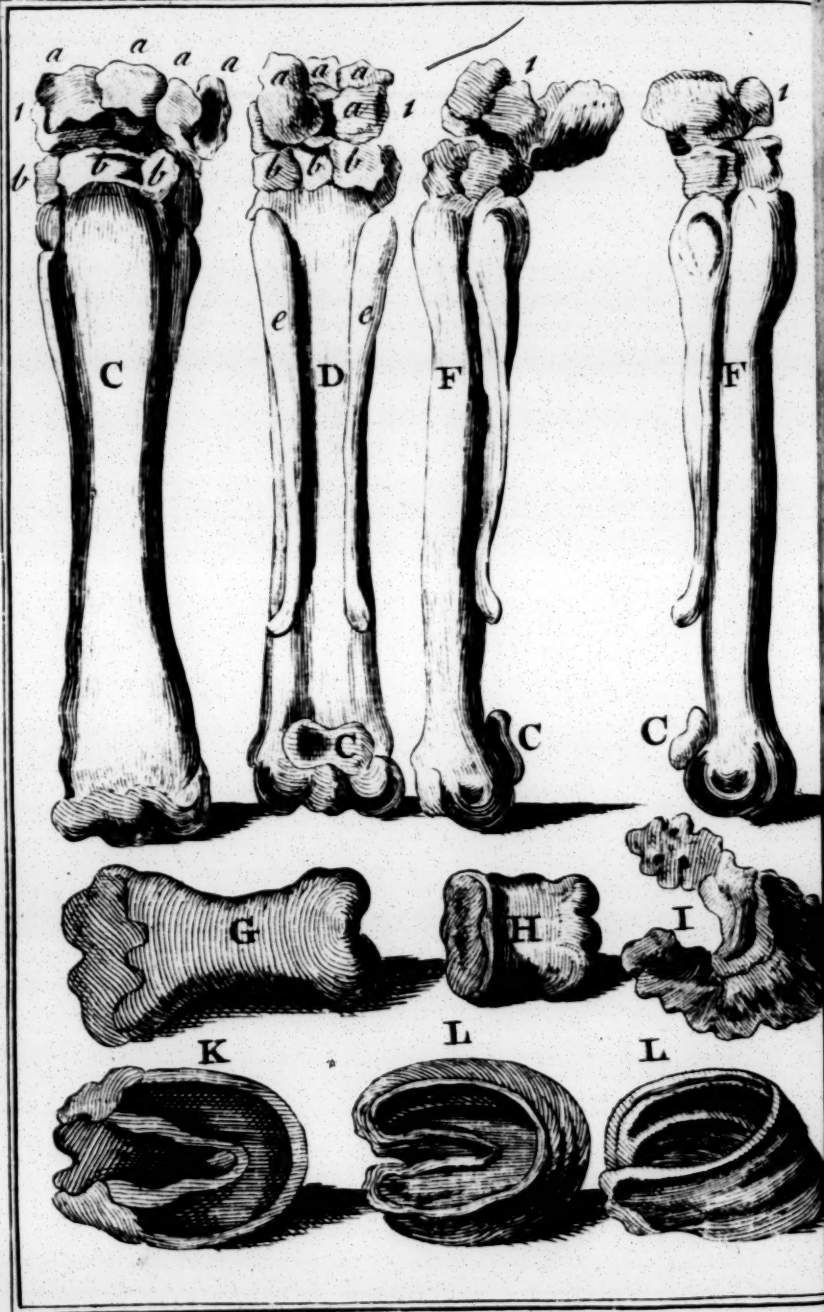
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of the stomach is called the *sword-like cartilage*, because its point resembles a sword.

The *blade-bone* of the shoulders runs from below the withers to the point of the shoulder bone, which last turns backwards toward the elbows, making an acute angle with the former. The blade-bone is joined to the ribs by muscles which have very strong tendons. In the lower end there is a shallow cavity, which receives the head of the shoulder bone. It is surrounded with a tough cartilaginous substance, and is covered with a broad strong ligament, which not only prevents the shoulder bone from slipping out, but renders the motion of the shoulder easy, and fit to play in all the necessary directions.

The *shoulder bone* is short, and reaches to the elbow, where it joins to the bone of the fore leg by very strong ligaments. It has two processes at the lower end, between which a high process of the leg bone enters, which makes the elbow joint; and the high slender process of the leg bone makes the elbow. This rises higher than the joint, and hinders the leg from turning backward.

The *leg-bone* is joined to the *shank-bone*, which are received into each other. This joint makes the knee, and has two ranks of little bones within the bending of the knee, three in the first, and four in the second, which serve to render the motion safe and easy. They are united together by ligaments, which are partly tendinous, and partly cartilaginous.

The *shank bone* reaches from the knee to the *great pastern*, and is composed of three bones, one of which is large, and the others small. These last are thick and round upwards, and small downwards. The great pastern has three small processes, which are received into three cavities of the shank-bone. The great pastern has likewise two cavities, which receive the process of the shank-bone. On the back part of the great pastern, two triangular bones are fixt, which form the *fetlock*, and serve to sustain the joint in its regular motions, preventing the false.

The *little pastern*, or *coronary bone*, is so closely united with the *great pastern*, that they seem to be one before

fore examination. The lower end of the little pastern is articulated with the coffin or foot-bone, between which behind is placed the *nut-bone*, so called by *Mon-sieur la Fosse*, and which is omitted by *Gibson*. The little pastern is reduced into the great by two heads, and into the coffin-bone in the same manner.

The *coffin-bone* is so called, because it lies within the hoof, as in a coffin. It is round on the upper part, where it receives the little pastern or coronary-bone, but grows broader and thinner towards the bottom. It is of a porous substance, and may be easily pierced by nails or other sharp things that are trod upon.

The *nameless bones* are seated on the hind part of a horse, and are divided into the *haunch*, the *hip*, and the *share-bones*. The flat sides of the hip-bone form the hip, with the muscles that are placed in the hollow of them. The haunch-bones, which some call the *os pubis*, make a small arch at the extremity of the lower belly, through which the yard passes, at the entrance of which is the neck of the bladder. The *share-bones*, termed in Latin the *ischium*, have a round cavity on each side which receive the head of the thigh-bone. The back or upper part of these bones are joined to the *os sacrum* by cartilages or gristles which in time turn almost into bones. The bone called the *os sacrum* lies under the crupper next the rump; which, with the nameless bones, form the pelvis or basin. It is joined to the lowest rack-bone of the loins, and to the uppermost bone of the rump.

The thigh-bone has a round longish head, called by some the whirl-bone, which enters the cup of the hip-bone, and on which it turns backward and forward. The lower end of the thigh bone has two processes, like a pulley, between which there is a large space which receives the protuberance of the leg-bone. Between the thigh-bone and the leg-bone there is a hollow that receives the stifle-bone, which answers to the kneecap of a man. It is prominent on the outside, and rough where the muscles of the thigh are inserted, and curved and smooth on the inside. It is kept in its place by a strong ligament which rises from the upper

per end of the leg-bone, and is inserted into its lower end: as also by the tendons of the muscles of the high, which are inserted into its upper end; together with a strong ligamentous substance which is expanded all over it. It is very strong and solid, like a piece of flint, and has no cavity.

The *small bones of the hock* are placed in two ranks, like those of the knee: the first consists of three, and the second of four, which are articulated into the instep. They are smooth, to facilitate the motion of the joint, and serve to keep a horse's legs from doubling under him. The *instep* consists of three bones closely united, which appear as one. The pastern and coffin-bone differ in nothing from those of the fore-feet.

The *hoofs* are made up of husks, which cover the *pyramidal papillæ* of the skin, which lie close upon one another. They are without sense, that the horse may the better encounter the roughness of the road. When they are pared or cut, they always grow again. They are fastened to the coffin-bone by a ligament which surrounds it below the coronet, like a piece of tape. Underneath the hoofs are many twigs of tendons, nerves, and muscles, which run to the bottom of the foot, making the substance which lies beneath the sole and the coffin-bone.

All the long-bones are hollow in the middle, being filled with marrow, and porous at the extremities; over which they have an epiphysis or gristly cap, to render the motion of the horse free and easy: there are likewise glands in the joints, which separate an oily matter, which always keeps them slippery, and prevents their wearing.

Of the MUSCLES.

THE *muscles* have been defined before, and are well known to be the instruments of motion. They have long been the subject of an elaborate enquiry in a human body, and for that reason have obtained

tained particular names. But as these are wanting in a horse, we can only at present describe them by their uses. And this, if duly attended to, will answer all the purposes of those, who out of curiosity examine into the nature of a horse, or who have undertaken the more arduous task of curing their diseases, especially in cases wherein the muscles are principally affected.

I shall begin with the *muscles* of the *eyelids* and *eyes*. The *eyelids* have one pair of muscles, which serve to open them, and two to shut them. That which is employed in opening them, is peculiar to the eyelid; whereas the other two, whose use is to bring them together, or shut the eye, is inserted into both. They all have their rise from the edge of the hole in the bottom of the orbit, through which there is a passage for the optic nerve. The muscles in the forehead have some share in these actions, which may be perceived when the horse is brought out of a dark place into the light.

The *eye* has seven pair of muscles, to perform the variety of motions which that organ requires. They have six of these in common with men, and have their rise from the same part as the former, as also the seventh, which is peculiar to animals that feed with their heads downwards, and serves to suspend the eye, keeping it from projecting too far outwards. It is short and fleshy, and is inserted into the hinder part of the *cornea*.

The *nose* has four pair of muscles, which arise from the upper jaw, and from under the eyes. They are all inserted into the gristles of the nostrils, and part of the upper lip. They serve to widen and contract the nostrils which action is most apparent when horses are much heated with exercise, when they are broken-winded, and when they have a fever. When the working of the nostrils is violent, the upper-lip is drawn upward at the same time.

The *lips* have five pair of muscles that are proper, and two common to the mouth and cheeks; one pair of these serve to draw the superior lip directly: Besides, there is a remarkable muscle which belongs to the lips, and assists in all the motions of the jaw, and has a very strong action; for which reason, it arises partly from

from the *vertebræ* of the neck, partly from the shoulder-bone, breast-bone, and collar-bone, and is inserted into the chin, lips, and lower part of the nose. The remainder which direct the motion of the lips arise from the upper and lower jaw, and are inserted into the sphincter muscle, which surrounds the extremity of the lips.

The muscles belonging to the *lower jaw* are the temporal muscles, which compose the fleshy part of the temples, which serve to shut the mouth, and the above-mentioned strong muscle which is inserted into the chin and upper lip, which helps to pull down the jaw and open the mouth. The masseter muscles are used in chewing; and there is one pair that pull the jaw forwards, and another backwards.

The *tongue* consists of muscular fibres, which lie in different directions, and have different motions. The tongue has seven pair of muscles, some of which arise from the lower jaw, and some from the *os hyoides*. One pair arises from the temporal bones, and pulls the tongue backwards, being inserted in the side of the tongue, and another proceeds from the lower jaw near the furthestmost grinders, and is inserted into the bridle of the tongue. When these act together, the horse is enabled to swallow the aliment after it is chew'd.

The head of the wind-pipe has six pair of muscles, which help to open and shut its valves when the air passes and repasses in breathing. It has likewise another pair which draws both sides of the ewer-like gristle together, to prevent any hurtful matter from entering therein. The *epiglottis*, which serves chiefly to open and shut the windpipe, has very small muscles. When these muscles are affected by colds, or are inflamed, they render swallowing difficult.

The head of the *gullet* or *pharynx* has muscles which serve to contract or open the upper orifice of the gullet; and there is likewise a kind of sphincter muscle which serves to contract it after feeding.

The ears of a horse are very moveable, and are therefore turned different ways, according to the different directions of sounds, especially when they are hot or fearful.

fearful. The outward ear has four muscles; one of which lifts it up and points it forward; a second pulls it backward; a third points it downward; the fourth assists the second, and, pulls the ear backward, and downward towards the horse's neck. A quick motion of the ear is a sign of strong muscles, and a good spirit. The *inward ear* has two muscles which belong to the organ of hearing.

The *head* and *neck* are moved forward, backward, sideways, and somewhat circular. To perform which motions, there are eight pair of muscles proper to the head, and four pair of common to the head and neck. Some of the proper muscles arise from the breast-bone, collar-bone, and the *vertebræ* or rack-bones of the neck, and are inserted into the occipital or noll-bone, or into the processes of the temporal bones. Those that belong both to the head and neck, arise from the breast-bone, the spines of the *vertebræ* of the chest, and the rack-bones of the back, and are inserted higher or lower into the transverse processes of the bones of the neck. These with the muscular expansions between the processes make up the bulk of the flesh lying on those parts. These expansions are the *interspinal muscles*, which assist in the motions of the *vertebræ*.

The *back* and loins have four pair of muscles, common to both. The first pair are very long, for they extend from the haunch-bones and the *os sacrum* to the temporal bones on each side of the neck, and are connected with the spines as they pass along. They are a great security to the back, and assist the other three pair in all their motions. When all these muscles act together, the whole back is contracted; but when they act on one side only, they bend the body on that side.

The *lower belly* has five pair of muscles, which severally rise from the haunch-bone, share-bone, ribs, breast, and other adjacent parts. They are mostly inserted into the white line which runs along the middle of the belly. One pair passes obliquely downwards, another obliquely upwards, another has a straight direction from the breast to the share-bone. A fourth pair assists the straight muscles in pulling down the breast: And the fifth are the
trans-

transverse pair which run from the loins and lowermost ribs, on each side, to the white line. The use of these muscles is to compress the belly, and discharge the excrements, likewise they assist the midriff, together with the muscles of the breast and ribs, in respiration.

The *breast* has four pair of muscles to expand and dilate the chest, and two pair to contract and compress it. These compose the flesh which belongs to the brisket, and all the breast from the collar-bone down to the pit of the stomach: together with that which covers most of the foremost ribs. Some of these proceed forwards from under the shoulder-blades and rack-bones of the neck and chest, and some arise backwards from the rack-bones of the loins and os sacrum. These are mostly inserted into the ribs, in such a manner as will best promote an easy and perfect respiration. The *intercostal muscles* are that portion of flesh that lies between the ribs, whereof part are said to be internal, and part external. These help to straiten and dilate the breast alternately in breathing.

The *diaphragm* or *skirt* is a muscular substance which separates the chest from the lower belly. It arises on the left side from a process of the rack bones of the loins, and on the right from the uppermost of the loins, and the lowermost of the breast. It is inserted into the breast bone, and the five lower ribs. The middle is flat and tendinous, till the commencement of the fleshy fibres. These fibres proceed from hence as from a centre, and are sent all round like the rays of a circle. When this muscle acts, it pulls the ribs downward, and assists the muscles of the lower belly in the expulsion of the excrements; but is more particularly useful in assisting respiration. This muscular substance is greatly relaxed and extended in broken winded horses.

The *heart* is a noble part, whose shape and appearance is well known to all. It is composed of fibres that run in a spiral direction; as also of transverse, longitudinal, and straight fibres; by which means it acts as a muscle, and is the principal organ in the circulation of the blood. It has two cavities near each other, whereof one is called the right ventricle, and the other

ther the left. The *pulmonic artery*, which distributes the blood to the lungs, proceeds from the right ventricle, which is the largest and thinnest. The great artery which carries the blood to all the parts of the body, arises from the left ventricle. Upon the upper part of each ventricle there is another cavity called the auricle. The *vena cava*, or great vein which brings the blood from all parts of the body is joined to the right auricle; and the pulmonary vein which brings the blood back from the lungs, is joined to the left auricle. The auricles, like the ventricles, are set one against another. In the inward part of the ventricles there are several valves. Those which are placed at the entrance of the ventricle suffer the blood to pass from the heart, and hinder it from returning the same road. Those which are placed at the entrance of the auricles, permit the blood to enter into the ventricles, and prevent it from returning back the same way.

The whole *intestinal canal* reaches from the top of the gullet to the anus, including the stomach. One of their coats consists of muscular fibres, which by their power of contraction assist digestion, and promote the passage of concocted aliments, part of which being turned into the chyle, enters the villous coat of the intestines: they likewise forward the exit of the gross excrementitious mass that is left behind.

The *anus* or *fundament* has a sphincter muscle seated at the extremity of the rectum or straight gut. It consists of circular fibres, and surrounds the anus like a ring. Its use is to close the fundament, and to prevent the falling out of the gut. There is a muscle called the *levator*, which assists the expulsion of the excrements: it rises from the ligaments of the hip-bones and os sacrum, and is inserted into the sphincter.

There is also a sphincter muscle which surrounds the neck of the bladder, to prevent the urine from coming away involuntarily. The muscles belonging to a horse's yard are the *erector*, the *dilator*, and the *cremaster*.

The *scapulæ* or shoulder-blades have four pair of muscles. The first are the *cucullares*, which are placed on the top of the withers, and when they are very fleshy, they render a horse thick-shouldered. They are slender

at their rise, and grow broader as they proceed to their insertion into the spine or ridge of the shoulder-blades, the collar, and the shoulder-bones. The second are the *levator*es, which cover the collar-bones. They arise from the first transverse process of the neck, and are inserted in the fore part of the shoulders, drawing them upwards and forwards. The third pair are seated under the pectoral muscles, arising from the four foremost ribs, and terminating in the anchor process of the blade-bone. These draw the shoulder-blades forward. The fourth arises from the lowermost spines of the neck and the uppermost of the breast, and are inserted into the bottom of the shoulder-blades by very strong tendons. When they act, they draw the shoulder-blades a little upwards and backwards. Hurts or strains of these muscles produce lameness of the shoulders.

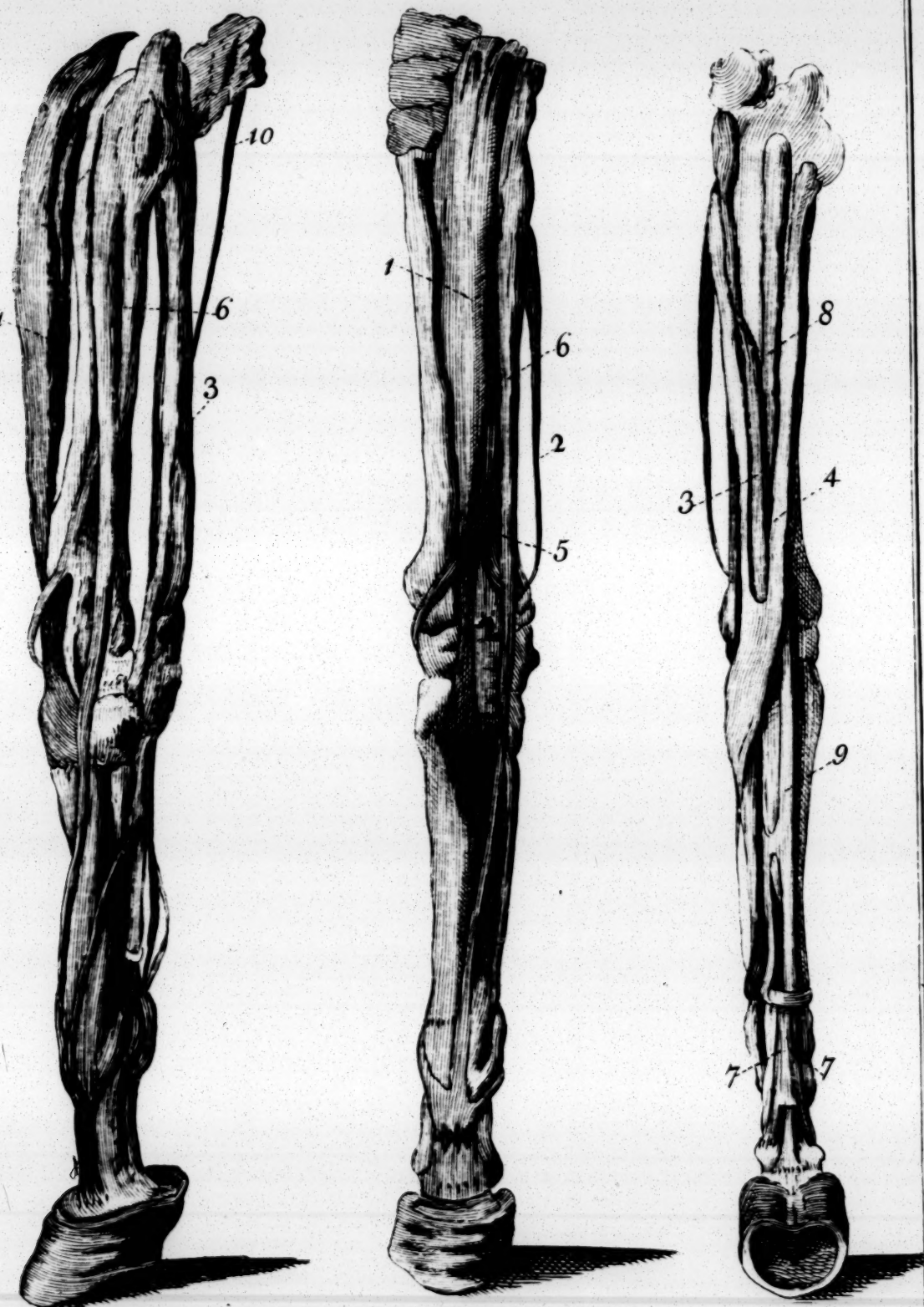
The shoulder, properly so called, reaches from the point of the blade-bone to the elbow, and has nine muscles: the first of which arises from the collar-bone, and running along part of the blade-bone, goes to be inserted about the middle of the shoulder-bone, serving to raise the shoulder upwards. The second proceeds from the ridge or spine of the shoulder-blade, and is inserted by a strong broad tendon into the neck of the shoulder-bone. There are two which serve to depress the shoulders or pull them down: the first called *latissimus dorsi*, arises from the *os sacrum* near the rump, from the haunch bones, and the rack-bones of the back, and spreads over a great part of the back; its fellow doing the same on the other side, and is inserted into the shoulder-bone. The other depressor rises from the lower side of the shoulder-blade, and is inserted into the upper and inner side of the shoulder-bone. The pectoral muscles arise from the inner part of the shoulder blade, near its edge and are inserted a little below the round heads of the shoulder-bone. They serve to bring the shoulder forward. The first of the remaining three has its rise under the ridge of the blade-bone, and terminates in one of the ligaments of the shoulder-bone. The second is seated between the shoulder-blade and the ribs, and terminates in another ligament of the

shoulder-bone. The last proceeds from the lower angle of the shoulder-blade, and terminates in the neck of the shoulder-bone. Hurts, sprains, and relaxations of the bones have produced a swelling and a lameness, which have caused many to think the shoulder has been out of joint. But this is very seldom the case, and whenever it does happen, it will scarce admit of a remedy.

The fore-leg has several muscles to perform its motions. The first proceeds from the anchor-like process of the shoulder-blade and the upper edge, and terminates on the inside of the knee, a little above the joint. The second arises from the middle of the shoulder-bone, and is inserted near the same place. These serve to raise up the leg. Another muscle arises from the lower edge of the blade-bone, and is inserted into the outside a little above the knee. Another arises from the shoulder-bone, and terminates in the same place. These, with two other small muscles, compose the fleshy part of the arm.

There are two muscles which bend the knee, and two others that extend it. The *flexores* or *benders* of the knee proceed from the inner knobs or processes of the shoulder-bone, and running down on the inside lower than the knee, are inserted into the hinder part of the top of the shank. The *extensores* or *extenders* of the knee proceed from the outer process or knob of the shoulder-bone, the tendons of which passing over the knee, are inserted into the fore part of the head of the shank. These, together with the ligaments to which they are joined, compose the tough substance on the fore part of the knee.

There are two *flexores* or *benders*, and two *extensores* or *extenders*, that belong to the fore pasterns and coffin-joints. The first of the *flexores* of the pastern reaches from the shoulders to the hinder part of the pastern-joint, where it is inserted: its tendon forms the back sinew of the fore-leg. The other arises from the upper part of the shank-bone, and is inserted into the coffin-bone. The first extender of the pasterns proceeds from the outer process or knob of the shoulder-bone, and is inserted into the fore and outer part of the pasterns and the coffin-



References 1, 2, 3, &c. belong to the Description of Muscles of the Leg, in y Appendix.



coffin bone. The other rises fleshy from the inner process or knob of the shoulder-bone; but quickly changes into a small tendon, and descends to the bottom of the sole, where it terminates in a fleshy expansion, which is very sensible.

Near the fore part of the instep, and behind in the bending of the pastern, there is a ligament like a ring to secure the tendons of the muscles that pass to the bones of the pastern and coffin, and serves to strengthen them, as well as to keep them in their place.

That part of a horse is called the thigh, which reaches from the huckle or whirl-bone to the stifle-bone or knee-pan. Three muscles pull the thigh forwards, or raise the stifle towards the belly. The first rises from the transverse processes of the lowermost vertebræ of the chest, beneath the withers, and two or three of the uppermost of the loins, and ending in a strong round tendon, is inserted into the lesser head of the thigh-bone. The second rises from the share-bone, and turning likewise into a strong round tendon, is inserted into the lesser head of the thigh-bone, near the stifle. The third, as well as the rest of the muscles of the thigh, except two that turn the thigh obliquely, arise from the hip-bones, rump, and *os sacrum*; part from their outsides, part from their insides, part more distant, and part nearer, and go to be inserted above the stifle, or at the very extremity of the thigh-bone. These compose the fleshy part of the hip, and pass over the hip-joint, to which they are a great security. One of the pairs that turn the thigh obliquely, have their rise from the outer circumference of the *ischium*, and the other proceeds from the inner circumference. They are both inserted near the great rotator of the thigh, to prevent the irregular motions of the other muscles.

The leg has five pair of muscles that serve to extend it. The first arises from the upper part of the *os ilium*, and is broad and thin, making a kind of membranous expansion, which covers the greatest part of the other muscles of the thigh, and spreading over the stifle, is inserted into the upper part of the *tibia* or leg-bone. The second rises near the first, and is also inserted into

the leg-bone forwards, a little below the stifle. These two have a sort of oblique course, but the third runs straight along the fore part or edge of the thigh, as far as the stifle, where it changes into a broad strong tendon, which adheres close to the bone as it passes over it, and is inserted into the upper head of the leg-bone. The other two are so large, as chiefly to make up the fleshy part of the thigh. The first proceeds from the great trochanter and the neck of the thigh-bone, and the second from the lesser trochanter. The tendons of both the muscles pass over the stifle, and uniting with the former, are inserted into the upper part of the leg-bone, the one towards the outside, and the other towards the inside. The tendons of these muscles, but more especially those of the last three, compose the strong cap or cover that lies over the knee-pan, in order to prevent a dislocation.

The *flexores* or benders of the leg are four. It has likewise a muscle that moves it obliquely. The two first rise from the process or knob of the coxendix or rump-bone, and are inserted backwards below the bending of the leg, behind the stifle, one on each side: they make up the bulk of the flesh on the hind part of the thigh. The third arises near the first and second; and the fourth from the middle of the share-bone, and passing downward between the other two, are inserted into the back part of the leg-bone, near the middle. When it acts, it brings up the hock toward the hip. The two first acting singly, draw the leg either to one side or the other; but when they all act together, they draw the leg directly backwards. The fifth muscle which moves the leg obliquely, has a broad and nervous origin at the outward head of the thigh-bone, and passing obliquely down the thigh, terminates in the hinder part of the upper prominence of the leg-bone.

Of the muscles of the lower part of the leg or instep, two serve to lift them up. The first has a fleshy origin from the upper appendage of the leg-bone, a little below the stifle: it adheres close to the bone as it descends, and passing beyond the cartilaginous or gristly part of the hock, is divided into two small tendons, which are inserted into the fore part of the instep bone. This, when

when it acts, raises the instep and foot upwards, and bends the hock at the same time. The second proceeds from the upper appendage of the leg a little below the stifle, and terminates on the outside of the instep bone, assisting the other in the abovesaid action, and at the same time inclining it somewhat outwards.

The *extensores* or extenders of the foot are three. The first rises with two heads from the inner and outer head of the thigh-bone, and with the two following answer to the muscles which compose the calf of the leg in men, namely, the *gastrocnemius*, the *plantaris*, and *solaris*. The tendons of these three muscles uniting together, form the great tendon or matter-sinew, which is inserted into the back part of the ham, or the heel of the hock. It is called the *tendo Achillis* in men. These muscles serve to stretch out the leg. The *plantaris* or muscle of the foal leaves the other two at the heel of the hock, and passing along sinewy on the hind part of the instep-bone and pastern, runs under the annular ligament at the bend of the heel, by which it is kept in its place; then turning fleshy, it spreads itself at the bottom of the foot, in the same manner as the *palmaris* in the fore foot.

There are two muscles that move the leg and foot sideways: the first rises from the upper end of the leg-bone below the stifle, and is inserted into the coffin-bone; it serves to turn the foot inwards. The other proceeds from the hinder part of the same bone, and passing along the outside of the hock, is also inserted into the coffin-bone; and when it acts, it turns the foot obliquely outwards.

The *flexores* or benders of the pastern and coffin-joint are two: the first arises from the hinder part of the leg-bone, and passing down to the instep and pasterns, is inserted into the coffin-bone. The second arises a little below the hock, and is likewise inserted into the coffin-bone. The *extensores* are also two: the first rises from the shank, a little below the stifle, and is inserted into the Coffin-bone. The second proceeds from the annular ligaments, on the upper part of the pastern joint, and is likewise inserted into the coffin-bone. These
serve

serve to extend the foot, and place it firmly on the ground.

Of the INTEGUMENTS of a HORSE.

THE HAIR needs no description, only it is observable that it is thicker and smoother in young horses than in the old. It is a great ornament, especially in those that have long manes and tails. When the skin has been wounded, burnt, or scalded, so as to destroy its texture, as soon as it is cured a smooth cicatrix will succeed, and the spot will be left quite bare; or if the hair comes again, it is always white and weak in comparison of the former. Hence the jockeys have learnt to make artificial stars in the foreheads of horses, when they have none naturally.

Next under the hair lies the SCARF-SKIN, which it passes through. It covers all the true skin, and, as was observed before, is that which rises in a blister, when any part has been burnt or scalded; as also in the farcy or other diseases of the skin. The matter of perspiration, so necessary to health, passes through its pores; and when they are stoppt by a sudden change of air, from hot to cold, many sorts of diseases may ensue; but particularly fevers.

The SKIN or HIDE lies under the scarf-skin, and consists of a surprising texture of tendinous and nervous fibres, mixt with a great number of vessels. This texture will stretch every way, as is observable in mares with foal, and afterwards return again to its natural dimensions. Above this the papillæ are placed, which some make a distinct tegument, and call it the papillary body. It is composed of several eminences of a distinct figure, principally formed by the extremities of the nerves, which are distributed in the skin. They may be readily discovered when the scarf-skin is taken off: They are the organs of touching; and if they were not covered by the scarf-skin, which is insensible, every object of touch would excite pain. Under the skin the military glands

glands are seated, which are exceeding numerous, and are look'd upon as the secretors of sweat.

Horses, and many other animals, have a fleshy pannicle which lies under the skin, by means of which they can move the skin to shake off any thing that lies loose on the hair. It may readily be perceived on both sides of the neck, the sides of the belly, over the ribs and flanks, where the skin is loose and moveable.

The fat lying under the skin is another tegument, which principally consists of a collection of membranous cells kept together by a common membrane called the *adipose membrane*. These cells are filled with an unctuous liquor, which returns into the blood by ducts called adipose vessels, and serve to abate its acrimony. It is likewise of great use to render the muscles of the several parts of the body soft and supple, and consequently to enable them to perform their frequent and necessary motions without too much friction. It is thickest on the lower belly and hips, and between the interstices of the large muscles. It is sometimes pretty thick on the neck and cheeks; but is thin about the limbs and in all dry, boney parts.

Of the Contents of the ABDOMEN or LOWER BELLY.

WHEN the *abdomen* is opened, the first thing that offers itself to view is the PERITONÆUM, which is a kind of bag made of a thin membrane of pretty close texture, and yet capable of a considerable extension, and of returning to its former state. This bag contains the greatest part of the *viscera* of the lower belly, but in a particular manner. In several parts of the convexity there are several depressions, which form a kind of cells, which contain the viscera within the *peritonæum*, namely, the guts, the stomach, the liver, the spleen, &c.

The *ligaments* which serve to sustain most of these viscera, are nothing else but a particular kind of doubling of the *peritonæum*, accompanied with a portion of the cellular and membranous web, filled with fat, which

covers

covers its external surface ; such as the ligaments of the liver, the spleen, the uterus, and *mesentery* itself, which is the common ligament of the guts, and is formed by a doubling of the *peritonæum*, accompanied with its cellular web. This lies on the surface of the *peritonæum* throughout its whole extent ; and is of a particular texture, consisting of several membranous cells, by means of which the *peritonæum* is united to the sides of the belly. The part contained in this web, which may be seen without opening the *peritonæum*, are the *kidneys*, the *ureters*, the *bladder*, the *lower large blood-vessels*, &c.

The internal surface of the *peritonæum* is smooth and sleek, and is continually kept moist by a serosity which transudes through the pores throughout its whole extent. This moisture is necessary to render the motion of the intestines more easy, because otherwise the friction would cause a painful sensation.

The cellular web has four processes, two of which accompany the crural vessels, and the other two the spermatic vessels in horses. These processes have been generally supposed to be made by the *peritonæum*, but this is a mistake.

The *peritonæum* being opened, you may discover all the viscera of the lower belly. On the right side is the *liver*, the *gall-bladder*, and a part of the *gut colon* : on the left side, the *spleen*, a part of the colon, the *caul*, the bottom of the *stomach*, and the *pancreas* : in the upper part you may perceive the two orifices of the stomach, the *gut duodenum*, the trunk of the *vena portæ*, the lower *vena cava*, and the *great artery*.

The *CAUL* lies uppermost over the intestines, and is a very fine membrane larded with fat, somewhat like net-work ; it reaches from the bottom of the stomach to the umbilical region. It resembles an apron tuck'd up. The fore part of it is connected to the bottom of the stomach, to the duodenum and the spleen ; and the hind part to the colon. The use of it is to preserve the suppleness of the fibres of the guts, duodenum, and colon, to which it is connected : it sends sulphurous particles to the liver for the preparation of the bile,
and

and by its unctuosity abates the acrimony of the blood.

The OESOPHAGUS or GULLET, being a part of the intestinal canal which is extended from the mouth to the *anus*, may properly be taken notice of in this place. It reaches from the bottom of the mouth to the diaphragm; next to this is a sort of bag called the stomach; and the remainder hath the general name of intestines or guts. The gullet descends along the neck behind the wind-pipe; the upper part, which is a little dilated, is called the *pharynx*. It has four coats: the first is common to the neighbouring parts; the second is fleshy, and is composed of longitudinal and circular fibres; and the third consists of nervous or tendinous fibres crossing each other every way: the fourth is called the villous coat; it is very porous, and always besmeared with a clammy liquor proceeding from the glands lying behind it.

The STOMACH is a membranous bag seated behind the diaphragm or midriff. It is in shape like the bellows of a bagpipe, and has two orifices; the right of which is joined to the gullet, and the left, named *pyloris*, to the guts. It consists of the same membranes and coats as the gullet.

THE INTESTINES OR GUTS are six in number; namely, the *small gut*, which in a man is divided into the *duodenum*, the *jejunum*, and the *ilium*, and is commonly about twenty-six yards in length; the *cæcum* or *blind gut*, the three *colons*, and the *straight gut*. The three colons are divided by two small necks, each about half a yard long. On the upper and under sides there are two ligaments, which run along the surface, and serve to purse up this gut, which with a valve on the inside serve to keep the aliment from passing off too hastily, that the nutritious juice may be extracted. The straight gut runs directly along from the colon to the fundament, and is half a yard long. The guts have the same coats as the gullet, but are considerably thicker in these last mentioned, and like it are always moistned by the liquor proceeding from the glands.

The guts are fastened to the back by the mesentery, which is about nine inches broad from the guts to the back. It takes its rise from the third vertebræ of the loins, and consists of two membranes, which are full of small glands and blood-vessels, and is formed by the doubling of the *peritonæum*. It forms several folds along its circumference, not unlike a ruffle, to which the small guts are connected.

Having thus taken notice of the *intestinal canal*, and its several parts, it will not be improper to make some observations on the *progress of the chyle*. If you open a dog that has been just killed two or three hours after he has been fed, you will see on the guts, especially those that are small, a great number of little white vessels called *lacteals*, which glide between the two membranes of the mesentery, and, communicating with each other, advance to the glandulous body placed in the middle. From this substance other lacteal veins proceed, which differ nothing from the former, but in being fewer in number, and somewhat more large. These are called *secondary lacteals*, and are discharged into a cellular and membranous bag, generally placed on the first vertebræ of the loins, and is hid in part of the right appendix of the diaphragm. This is called the reservatory of the chyle. From this reservatory the thoracic duct proceeds, which runs along the *vertebra* of the back, and towards the middle of the back turns to the left, and empties itself into a large vein called the *left subclavian*.

The *lacteal veins* are not only to be met with on the small intestines, but also on the large, which shew that an animal may be kept alive by nourishing glysters only.

The LIVER is a conglomerate gland of a very large size, of a reddish brown colour, and of a pretty firm consistence. It makes up a great part of the right side and a portion of the middle epigastric region, immediately below the diaphragm or midriff. In a horse it is divided into four lobes, to render it flexible in all violent motions, and so preserve it from danger. Of these the right lobe is much the largest, and is called the great lobe of the liver.

The

The *shape* of the *liver* is not regular, but accommodates its conformation to the adjacent parts. It is convex and smooth on the upper side, to tally with the diaphragm, to which it is connected, and whose motions it follows. Its inferior surface is concave, and unequal, having eminences and cavities which answer to the spaces that are between the organs. The eminences belong to the great lobe of the liver, to which the ancients gave the name of *portæ*.

The liver is connected to the adjacent parts, but chiefly to the midriff, by means of four ligaments. Some reckon the umbilical veins a ligament, but this is very much doubted by others.

The liver is covered by a thin membrane, which however may be divided into two *laminae*, between which there is a great number of lymphatic vessels, which are observable both on the convex and concave surface. The internal lamina seems to penetrate the substance of the liver, and to divide it into a great number of small lobes, which may be easily distinguished in a hog.

The substance of the liver is an assemblage of a great number of small vessels of every kind, which appear to be distributed to a great number of vehicles or small bodies, called of late pulpous grains. These vessels thus distributed, may be distinguished into those that carry some liquor, and into those that bring it back. The first are the ramifications of the *hepatic artery*, of the *vena portæ*, and of the *hepatic nerves*.

The *vena portæ* is a considerable trunk of a vein formed by two principal branches, one of which receives the blood which comes from the spleen, the *pancreas*, and one part of the stomach. It is called the *splenetic vein*. The other proceeds from the intestines and the mesentery, and is called the *mesenteric*. This trunk of a vein penetrates the liver on the concave side; but, before its entry, forms two other branches, one to the right, and the other to the left. Likewise there are many lesser branches which enter the vesicles of the liver. The other vessels which belong to the vesicles are branches of the veins, which correspond with the *vena cava*,

cava, and discharge the remainder of the blood which the *vena porta* has deposited in the liver. The union of these branches form three veins called the *hepatic veins*, which terminate in the trunk of the lower *vena cava* immediately below the diaphragm.

The *lymphatic veins* of the liver may be seen on both sides, where they form a wonderful kind of net-work. These veins generally empty themselves into the reservoir or receptacle of the chyle. The pulpos veins have each an excretory duct, which communicate with each other in the substance of the liver, and are commonly called the *biliary pores*. When these ducts are united, they form a large one called the *hepatic duct*, which discharges the bile into the small gut near the stomach. It is proportionably larger in horses than in other animals, because they have no gall bladder. Some say this is wanting, because it might be hurt by violent motions; but this cannot be the case, because many animals that are as subject to as violent exercise as a horse, are not without a gall-bladder; and therefore I shall not pretend to guess at the reason, or why a large and constant discharge of the bile is required in a horse, more than any other creature that feeds in the same manner.

The use of the *liver* is to separate this gall or bile already mentioned, and there is reason to believe it is brought to the liver by the *vena portæ*. The gall is a yellow, bitter liquor, of a pretty fluid consistence, composed not only of a serosity and salts, but also of unctuous particles, which form a liquor of a soapy nature, and nearly of the same taste, and is very useful to take old spots out of garments.

The gall being separated in the liver, is taken up by the biliary pores, then runs into the hepatic duct, and is constantly discharged into the gut above-mentioned. It serves to correct the aliment, and to prepare the chyle.

The PANCREAS is a conglomerate gland, of a very pale red, and of a pretty thick consistence. It is seated in the epigastric region, transversely, immediately below the stomach, reaching from the small gut to the spleen, to which it is united. The situation of the *pancreas* is such, that it may be reckoned to have two faces,

faces, an upper and a lower, two edges, the anterior and the posterior, and two extremities, the one to the right, and the other to the left ; that to the right, which is connected to the gut, is most considerable.

The *pancreas* is covered with two membranes, the one common, and the other proper. The common consists of the two leaves of the *mesocolon*, between which the pancreas is seated. The proper membrane immediately covers its substance, and is composed of many glandulous grains, beset with a vast number of vessels, whereof some carry a fluid to the pancreas, and some bring one back from thence. The former are the arteries and nerves ; the latter are the sanguinary and lymphatic veins, as well as the excretory ducts of the glands.

The *excretory ducts* of the pancreas are very numerous, perhaps as many as the glandulous grains of which it is composed. All these ducts unite with each other, and from their union results one common duct which carries a fluid from them all. It is called the *PANCREATIC DUCT*, and runs all along the pancreas, through the middle of its length, and empties itself into the small gut.

The *use* of the *pancreas* is to separate a fluid called the *pancreatic juice*, of the nature of *saliva*, and serves conjointly with the gall to bring the chyle to perfection.

The *SPLEEN* consists of a softish substance which may be readily extended, and is of a blewish colour a little inclining to the red. It is seated obliquely in the left hypochondrium under the diaphragm or midriff, and immediately above the left kidney. Its shape is of a longish tongue, and flattish.

The spleen is kept in its situation not only by resting on the adjacent viscera, but also by membranous ligaments which tie it to the diaphragm, and sometimes to the stomach itself, as also to the colon and the left kidney by means of the caul and the blood-vessels. It has two faces ; that turned toward the stomach is unequally concave, and that turned towards the ribs, which is convex.

The

The principal artery of the spleen proceeds from the *celiac*, the vein empties itself into the *vena portæ*. The nerves are very numerous, and form the *splenic plexus*. All these, when they enter into the spleen, are divided and subdivided into a great number of ramifications, and accompany each other to the last extremities of their divisions. They are contained in the common cellular capsule. The blood is extravasated among all these vessels, and kept in a web like cotton, which is very fine, and spread throughout the whole extent of the spleen, and terminates in almost imperceptible cells which communicate with each other.

The *use* of the *spleen* is very hard to determine: however it is probable the blood is detained by this means a great while in the spleen, in order to prepare it for the separation of the bile, which is afterwards to be performed in the liver.

The *CAPSULÆ ATRABILIARES*, called by some the renal glands, are two glandulous bodies seated on each side, a little obliquely on the upper and more internal part of the kidney, and are joined to it by a fine cellular web, and are covered by the external tegument of the kidney itself, called the adipose membrane. The substance of these renal glands is soft and spongy, covered with a fine membrane, and their colour is yellowish. In a *fœtus* they are as large as the kidneys. They have a cavity which contains a yellowish liquor, though by some said to be black. The use of these is hitherto unknown.

The *KIDNEYS* are two conglomerate glands of a firm consistence, and of a reddish brown colour. They are seated in the region of the loins, on the outside of the peritonæum and within its cellular web, one on the right end, and the other on the left, between the last of the false ribs and the bone called the *ilium*. The right lies upon the lower part of the liver, and the other under the spleen, which last is commonly placed higher than the other. The right kidney is somewhat triangular, the left oval, with the higher part bigger than the lower.

The *arteries* belonging to the kidneys, are called the *emulgent arteries*, and are generally two, one for each kidney. The *veins* in the kidney accompany the *arteries*, and when they are united into one trunk, they are called the *emulgent veins*. A principal vessel belonging to the kidney is called the *ureter*. It is a membranous pipe which receives the urine, as it is separated by the kidney, to carry it to the bladder.

The kidney has two coverings; the first consists of the cellular web of the *peritonæum*, and generally contains a great deal of fat. This being removed, you may discover the proper tegument or covering of the kidney, which it surrounds. It consists of two *laminae*, which are united by a fine cellular web, and between these the lymphatic vessels creep along.

The kidney is composed of three different substances: The first is the *cortical*, which consists of a great number of blood and nervous vessels with glandulous grains. The second is *tubulous*, and is composed of urinary pipes, which change into the third substance called the *papillary*, because it ends in ten or twelve *papillæ* full of small holes, which open into the pelvis or basin. This last is the membranaceous cavity of the kidney, sending forth tubes or pipes which embrace the *papillæ* like funnels.

The *URETERS* are membranous canals or pipes which reach from the kidneys to the bladder, wherein they are inserted obliquely above its neck. The coats are supposed to be like those of the guts.

The *BLADDER* is a membranous bag whose situation is well known, and is connected to the *peritonæum* only by its posterior and superior part, and therefore may be opened without hurting that part. The fore and lower part is called the neck. Its coats, like the intestines, are common, muscular, and nervous. This last being the inner, is exceeding sensible.

Next the neck of the bladder is the *URETHRA*, through which the urine is conveyed out of the body, and is much longer in horses than in mares. The bladder is connected in horses to the rectum or straight gut and the feminal vessels; in mares to the vagina, and
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in both to the os pubis, by ligamentous and fleshy fibres.

In the middle of the upper part there is a ligamentous chord called the *urachus*, which terminates at the navel, and is a continuation of the membranes of the bladder. The kidneys separate the excrementitious fluid from the blood, called the *urine*, which passes through the papillæ into the funnels, and from thence into the bason, and is discharged by the ureter into the bladder, where it remains for some time by the help of a sphincter which surrounds its neck, and stops its passage, till an uneasiness happens, which causes a contraction of its muscular coat; then with the assistance of the muscles of the belly and the midriff, the resistance of the sphincter is overpowered, and so the urine escapes. The urine is much of the same nature as the sweat, and they have such a relation to one another, that when the one is increased, the other is diminished.

The first thing to be considered in the ORGANS of GENERATION are the *testicles* or stones, whose situation is well known. Their shape is oval, a little flattened on the sides. Their coverings are common and proper: the common is the skin in which they are contained, which is divided into two parts, the one right and the other left, which outwardly appears like a seam. The proper membranes are, first, the *vaginal*, which consist of several membranous cells, and is a continuation of the cellular web of the peritonæum, and covers the whole testicle as well as its vessels. The second is a reddish membrane which adheres close to the former, and is only an expansion of a ligament. Under the vaginal coat there is a bag proper to each testicle, which surrounds them, and is only connected to the *epididymes*. Lastly, the *albugineous*, which is strong, and adheres closely to the substance of the testicles. It receives the spermatic vessels, and transmits them to the *testes*. The proper vessels are the *spermatic arteries*, which arise by a small beginning from the great artery, and the *spermatic veins*.

The *epididymes* are two, one to each testicle, which lie on the superior part in the shape of a caterpillar. Their substance is vasculous, and all the vessels open in-

to

to one duct called the *vas deferens*, by which it transmits the seed which it receives from the testes.

The *vas deferens* is a whitish pipe which looks like a nerve, and reaches to the seminal vessels and the urethra. Their use is to convey the seed to the seminal vessels and to the urethra itself at the time of covering a mare.

THE SEMINAL VESSELS are seated under the bladder, near its neck, and are divided into various cells, which communicate with each other. Each vessel has an excretory duct, which opens with a double orifice into the urethra on the under side, near the neck of the bladder.

THE YARD is the chief organ of generation, whose shape and size are well known. It begins with two bodies which unite under the os pubis, to which they are connected by a ligament. The inner texture is spongy, on the under part of which is the urethra for the passage of the urine before-mentioned. It is lined with a membrane full of small glands, which separate a liquor that defends it from the acrimony of the urine.

The parts of generation of a mare are analogous to those of a woman; and that they have a clitoris, is plain from an hermaphrodite of this species who was carried about as a show. The bottom of the womb is divided into two parts, called horns, as in other quadrupedes. But I need not be more particular in describing these parts, because, if due care be taken, they seldom or never come under the consideration of a farrier.

Of the Parts contained in the THORAX or CHEST.

THE second cavity of the trunk of the body is the CHEST, which is bounded on the lower part by the midriff, on the upper by the two first true ribs with the collar bones, on the fore part by the sternum and the extremities of the ribs, and on the back part by the extremities of the ribs that join to the back-bone, and by the back-bone itself.

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The proper *containing parts* of the chest are boney, fleshy, and membranous. The *boney parts* are the *ribs*, the *vertebræ* of the back, and the *sternum*. The *fleshy* are the *intercostal muscles*, the *sternocostal*, and the *midriff*. Among the *membranous* the *pleura* is chief.

The *parts contained* are the *heart* and the *lungs*.

The *PLEURA* is a membrane of a close texture, which lines the chest throughout its whole extent, and supplies the other parts contained therein with a covering. The internal surface of the *pleura* is smooth and polished, and always moist with a serosity that oozes from the pores, and is covered outwardly with a cellular web like the peritonæum. The *pleura* makes a fold or doubling at the *vertebræ* of the back, which terminates the whole length of the *sternum*. The doubling is called the *mediastinum*. It separates the chest into two parts, the one right and the other left. It does not adhere to the middle of the *sternum*, but a little to the left, whence the right cavity is largest.

The two *laminæ*, whereof the *mediastinum* consists, are not separated from each other immediately behind the *sternum* in their fore part, but afterwards recede from each other to make room for several parts, as the *pericardium*, part of the *windpipe*, the *gullet*, the *thoracic duct*, &c. Each *lamina* forms a kind of a purse for each lobe of the lungs.

The *MEDIASTINUM* serves to hinder the passage of any fluid shed on one side of the breast from passing into the other. This partition secures a free breathing on one side, if the chest should be opened on the other. It also hinders one side of the lungs from resting upon the other, when a horse lies on one side.

The *THYMUS* is a glandulous body seated in the upper part of the thorax, immediately under the *sternum*: its use is uncertain.

The *PERICARDIUM* is a membranous purse of a close texture, which immediately incloses the heart, and which is placed between the two leaves of the *mediastinum*; the figure is like that of the heart, but leaves room enough for its motions. It is connected to the *mediastinum*, to the *diaphragm*, and to the great vessels of the

the heart. It contains a liquor to lubricate the surface of the heart, and serves to keep it in its proper place.

The HEART is a hollow muscle of a conic figure, which is the principal organ of the circulation of the blood. The larger part is called the *basis*, the smaller the *point*. It inclines to the left, where its beating may be perceived. At the basis of the heart are two small purses which seem to be appendices, and are called the right and the left *auricles* of the heart. The right is largest. They have each two orifices, whereof one answers to the vein which discharges itself therein, and the other to its proper ventricle. Each auricle consists of a double row of semicircular fleshy fibres, and are strengthened by others in the shapes of columns, between which there are considerable spaces. These contract when the ventricles are dilated, and dilate when the ventricles are contracted; they being antagonist muscles to each other.

The *ventricles* are two remarkable cavities; the one is the right, and the other the left. The right is thinner, weaker, and larger than the left. It receives the blood from the vena cava and the right auricles, and drives it into the pulmonary artery and the lungs. The left is stronger and thicker, and not so large. It receives the blood from the pulmonary vein and the left auricle, and forces it into the great artery.

The *columnæ carneæ*, or fleshy columns, are in the ventricles as well as the auricles; and are so many small muscles, by the concurrence of whose membranous fibres, are formed peculiar membranes, called valves, placed at the orifices of the auricles. The columns run transversely from one side of the ventricle to the other, partly that they may assist the contraction of the heart in the *systole*, and partly to prevent too great a dilatation in the *diastole*.

The *valves* are of three kinds: *Tricuspidal*, which are three, and placed at the orifice of the right ventricle, which answers to the auricle on the same side. *Mitral*, which are seated in the left ventricle where it communicates with the auricle, preventing the returning of the blood into the heart from the veins. The *semi-*

lunar, which are three, and are placed at the beginning of the great, as also at the pulmonary artery, to hinder the return of the blood from the arteries into the heart.

The *muscular fibres* of the heart are in some places straight, in others spiral. These are of a double order; the *external*, which run from the basis and tendon of the heart towards the left; the *internal*, which run towards the right, and intersect the former. When they act, they constrict their cavities regularly, and expel the blood, which is called the *systole*. When they are relaxed, the two ventricles are dilated; this is called the *diastole*. The *auricles* are the two hollow muscles which are the antagonists of the ventricles, for they contract when the ventricles are dilated, and when the ventricles contract they are dilated, as was observed before.

The *blood-vessels* of the heart are of two kinds; the proper veins and arteries, called the *coronary*, distributed through the heart; and the common, of which two are veins, the *vena cava*, and the *pulmonary vein*; and two arteries, the *great artery*, and the *pulmonary artery*.

The *use* of the *heart* is to promote the circulation of the blood; for it receives the blood from all parts of the body by the veins, and by its contraction sends it back to all the parts of the body by the arteries. Upon these not only the functions of the body depend, but even life itself.

The *LUNGS*, commonly called the *lights*, is the largest viscus in the chest, and is divided into two parts or lobes, one on each side of the mediastinum, and contain the heart in the middle. They are not subdivided in a horse so much as in other quadrupedes. Each lobe is divided into small cells, which are the extremities of the *aspera arteria*, whence the substance is vesiculous and spongy.

The lungs are not only connected to the sternum and to the vertebræ of the back by the mediastinum, and to the heart by its vessels, but also to the pharynx and the tongue by means of the windpipe. There are also two membranous ligaments, which advancing from the posterior

sterior edge of each lobe, terminate in the vertebræ of the back, as far as the diaphragm.

The lungs are covered with a membrane which is continued to the pleura. This membrane has two laminæ, the internal of which forms several partitions which penetrate into the substance of the lungs, and divide it into innumerable small bodies called *lobules*, of various angular figures. These lobules have spaces between them, in which the nerves and blood-vessels lie, which make ramifications on the external surface of the lobules. There is likewise a cellular web in these spaces, which surrounds the nervous and blood-vessels.

The air cannot pass from one of the lobules into another, but only from the lobules into the cells, which surround the blood-vessels which lie therein, and back from these spaces or cells into the lobules. There are therefore two sorts of cells, the *branchic cells*, of which the lobules consist, and the *vascular cells*, which surround the vessels.

The TRACHEA ARTERIA or *windpipe* begins at the bottom of the mouth, and runs along the middle and anterior part of the neck, and goes to be distributed into the lungs by a great number of ramifications. The upper part of this is called the *larynx*, and the ramifications in the lungs the *bronchia*. The *trachea arteria* is a pipe which is partly cartilaginous, and partly membranous; the former is the fore part, and the latter is the hind part. The cartilages whereof this pipe is composed, do not form an entire circle, but want about a third, and are small at their extremities. These cartilages have a transverse situation, and are equally distant from each other. The space between each is occupied by a ligamentous, elastic membrane, which is connected to each ring. These rings are compleated by a thick membrane, with several distinct glandulous grains on the outside.

This pipe is covered inwardly with a membrane which is wrinkled according to its length, and is continued to the bronchia. This membrane is nervous, and has a very exquisite sense. It is continually moistened on the inside by means of a great number of glands ly-

ing behind it ; beyond which there are two plans of fleshy fibres, the one circular, the other longitudinal. The whole is covered outwardly with a coat which seems to be a continuation of the membrane of the lungs. The ramifications of the pulmonary arteries are more numerous and are larger than those of the veins, contrary to the mechanism of the rest of the body. There are *lymphatic* veins which may readily be discovered on the lungs of a horse soon after death.

The DIAPHRAGM or midriff is a muscular partition, which divides the chest from the lower belly : it has an oblique situation, and is convex towards the chest. It has two muscles, of which the superior is the largest, towards the middle of which there is a tendinous part. The fleshy fibres which surround it are connected to the ensiform cartilage, to the cartilages of the last true ribs, and to all the false, advancing to the boney part of some of the ribs.

The lower muscle of the diaphragm is less than the upper, and more thick. It is connected above to the hollow part of the tendinous or the nervous centre, from whence it proceeds to form two wings on the right and left, crossing each other. They run two fingers breadth before they unite, and leave an oval space between them, through which the œsophagus or gullet passes. Then these portions unite, and crossing each other, divide again to leave a passage for the lower great artery and the thoracic duct. They terminate with flat tendons in the two upper vertebræ of the loins. These are called the two appendices of the diaphragm.

On the right side of the nervous centre of the diaphragm there is a round hole for the lower trunk of the vena cava. The upper part has a covering for the pleura, and the lower for the peritonæum. The use of the diaphragm is to assist the breathing ; for in inspiration, or when a horse draws in his breath, it is moved downwards, and in respiration upwards, or into the cavity of the chest. It likewise promotes the motion of the contents of the abdomen, that is, the stomach, guts, liver, spleen, chyle, gall, &c. It helps

helps the expulsion of the excrements, urine and fœtus.

Of the BRAIN, NERVES, and FIVE SENSES.

THE whole mass contained in the cavity of the skull is called the *brain*, which is covered with two membranes; the *dura mater*, and the *pia mater*. This mass comprehends the *brain*, the *cerebellum*, and the *medulla oblongata*. They are all joined together, and are seated in such a manner, that the brain covers the cerebellum and the medulla oblongata. The brain is larger than the other two.

The DURA MATER is a thick membrane of a close texture, which lines the internal surface of the skull, and is closely connected therewith, not only in its basis, but in the parts which answer to the sutures, and throughout the rest of the extent. It consists of two laminæ, whose fibres cross each other obliquely: the one is called the internal, the other external. It has three processes; the first named *falx* begins at the crista galli, and runs backward under the sagittal suture to the cerebellum, and divides the cerebrum into two hemispheres. The second process runs from the lower and back part of the former to the upper edge of the os petrosum, and sustains the posterior lobes of the cerebrum, that they might not compress the cerebellum. The third is very small, and runs down the last great process to the great foramen of the skull.

The *sinuses* of the *dura mater* are hollow cavities in this membrane. They have been usually said to be four: the *longitudinal*, the *laterals*, and the *rectus* or right. The longitudinal runs along the upper edge of the falx from a hole immediately under the apophysis of the crista galli, and is continued along the spine of the coronal, and of the sagittal suture. The lateral sinuses begin at the end of the longitudinal, and are continued to the right and left into the gutters of the occipital, and terminate in the internal jugular veins. The rectus is the shortest of all the sinuses, and runs along

the juncture of the falx and the second process, and terminates at the end of the longitudinal sinus. The longitudinal sinus goes generally into one lateral sinus, and the rectus into the other.

The PIA MATER is composed of two laminae, between which the vessels run. It has a great number of foldings, which insinuate themselves into the furrows which are observable on the surface of the brain and cerebellum. Some mention another membrane of the brain, called the *arachnoide*; but this is nothing else but the external lamina of the pia mater separated from the internal, and is seldom seen but on the medulla oblongata and the spinal marrow.

The BRAIN, as divided into two hemispheres, is also distinguished into two substances, the external and the internal; the first is the cortical, and is ash-coloured; the second is the white medullary substance. On the surface of the cortical substance there are several furrows, whose irregular directions are not unlike the circumvolutions of the small guts.

If you draw the cortical substance of the brain a little asunder, you will see a white body which is the medullary substance, and in this place is called the callous body, because it is harder than in other parts. Any other part of the brain may be hurt without killing the animal, but a wound in this part produces immediate death, whence this is supposed to be the seat of the soul, where the operations of the mind are performed. It seems to be composed of several fine threads, which run transversely from one hemisphere to the other. In the middle is a kind of future which seems to be composed of two small white cords. The callous body is continued to the oval centre, a part of the medullary substance which appears after a part of two hemispheres has been cut off horizontally throughout the whole extent, nearly on a level with the callous body.

The two *upper ventricles* are two cavities in the substance of the brain, on the right and left, and they generally take up the whole extent of the two hemispheres of the brain. They each represent a horse-shoe, whose

whose horns are turned towards the fore part of the skull. These ventricles are separated from each other by a membrane called the *septum lucidum*, which is connected above to the whole length of the callous body, and below to one of the pillars of the fornix.

When the callous body is raised, the *fornix* may be seen, which is like an arch with three pillars, and a part of the *plexus choroides*. Two of the pillars are placed backwards, and the other in the middle between the ventricles, under the callous body. The fornix is connected to the adjacent parts by the extremities of the pillars, and by the upper part of the fore pillar. All the lower surface lies on the adjacent parts, in such a manner, that the serosity in one ventricle may glide into the other, under the fore pillar.

The CHOROIDE PLEXUS is a web of a great number of arteries and veins, distributed on a very thin membrane. The veins of this membrane unload themselves into the great sinus. This being raised, several eminences and cavities are received into the ventricles. The chief eminences are the striated or channelled bodies, and the bed of the optic nerves.

The external substance of the channelled body is ash-coloured, and in the inward is divided into several white rays, between which the ash-coloured part insinuates. Hence it has its name, because the white rays make it look like the channels of fluted columns.

The beds of the optic nerves are almost of an oval form, whitish without, and greyish within. They are joined to the whole length of their upper and lateral part, and are divided every where else. This space between them is called the third ventricle. Behind the beds of the optic nerves are eminences called the nates and testes; and between the beds of the optic nerves and the nates the pineal gland is seated, formerly thought to be the seat of the soul. At the entrance of the third ventricle, there is an oval cleft, formerly called the *vulva*, but now the anterior common aperture, because it communicates with the two first ventricles.

Towards the back part is another aperture, called the *anus*, which answers to a fourth ventricle placed under the cerebellum, from whence it receives the superabundant serosities to transmit them into the third, which are discharged into the pituitary gland placed at the pit of the spheroid, and that of the saddle.

The CEREBELLUM is seated under the posterior lobes of the brain, and is distinguished from it by a partition called the tent. The figure is almost round, and its posterior part is divided into two lobes. It is composed, as well as the brain, of an ash-coloured cortical and medullary substance. The furrows on the surface do not wind so much as those of the brain, but are parallel to each another, and are continued from one side of the cerebellum to the other: for this seems to be divided into several laminæ laid one against the other, like the plaits of a fan. On the fore and back part are two worm-like processes, so called on account of their shape.

The cerebellum being opened lengthways, its white substance represents a kind of a tree, by some called the *tree of life*. This opening likewise discovers the fourth ventricle, the extremity of which is called the *calamus scriptorius*, because it is hollow like a goose-quill.

The third part of the brain is called the MEDULLA OBLONGATA, or the *oblong marrow*, which is seated under the brain and the cerebellum, to which it communicates by bundles of white fibres, which seem to be the re-union of all those that enter into their composition. There are five eminences on the lower part, from which ten pair of nerves have their origin. The most considerable of these eminences is called the *annular process*, the second and third are called *pyramidal*, and the last the *olivary*.

Immediately beyond these processes the *medulla oblongata* seems to be divided into two lateral parts, by means of two pretty deep grooves; whereof one is in the anterior and lower part, and the other in the posterior and upper part. If you draw the sides of these grooves gently asunder, you will find an interweaving crossed by several medullary cords, which run obliquely from one side to the other. Hence the reason

son appears why the palsy, which is caused by a fault of the brain, affects the limbs on the side contrary to the part of the brain which is faulty.

The *pituitary gland* is in size and shape like a kidney bean. It is of a spongy substance, and seated under the saddle of the sphenoid, between the two laminae of the dura mater, the internal of which covers it above, and has a hole over-against the middle of this gland for the passage of the funnel. By this duct, it receives the serosity from the ventricles, and discharges it into the sphenoidal reservoirs, where mixing with the blood, it is taken up by the sinus answering thereto, and conveyed into the internal jugulars.

The *medulla oblongata*, or the oblong marrow, and the spinal marrow, are the origin of several nerves which are distinguished by pairs; whereof ten proceed from the oblong marrow, and in horses thirty-seven from the spinal marrow.

The first pair of nerves of the oblong marrow are the *olfactory* or smelling nerves. They pass through the holes of the *os cribiforme*, and are distributed on the inward membrane of the nose. The second pair is the *optic*, which proceed from the beds of the optic nerves, and passing through the optic holes, are bestowed on the eyes, forming the membrane called the *retina*.

The third are the *movers of the eye*. They arise from the annular process, and are lost in the muscles of the eye and eyelids. The fourth are the *palpebral*, and belong to the great oblique muscle of the eye. They pass out of the skull through a cleft of the sphenoidal bone. The fifth proceeds from the anterior part of the oblong marrow, and is distributed to the eye, to the upper and lower jaw. These branches are called the *ophthalmic*, the *superior maxillary*, and the *inferior maxillary*.

The sixth pair arise from behind the annular process, and is lost in the muscle called the *abductor oculi*, passing as the two former through the cleft of the sphenoidal bone. The seventh is the *auditory*. It arises from the

lateral parts of the annular process. It has two parts ; the one soft, which is lost in the inward part of the ear ; and the other hard, which is distributed on the external ear and the face.

The eighth is the *par vagum*, or the wandering pair : they proceed from the olivary processes, and are distributed on the gullet, the windpipe, the lungs, the stomach, &c. The ninth pair proceed from between the pyramidal and olivary processes, and are chiefly distributed on the tongue. The tenth arise from behind the olivary processes, and are distributed on the small straight muscles called the extenders of the head.

The SPINAL MARROW is only a continuation of the oblong marrow, and is composed of two substances, the inward of which is white, and the outward of an ash-colour. It is covered with four coats, the outward of which is thick, and adheres close to the internal surface of the canal of the vertebræ. The second is a continuation of the dura mater. Between these two coats there is a fatty substance. The third is the *arachnoid* ; and the fourth is a continuation of the pia mater. This immediately covers the spinal marrow.

The NERVES which proceed from the spinal marrow, as was observed above, are thirty-seven pair, whereof the neck has seven, which are dispersed partly on the muscles of the face, partly on the muscles of the neck, and partly on those of the shoulders and fore legs ; which being united with a branch from the second and fourth, form a nerve called the phrenic nerve, which is distributed on the diaphragm, the pericardium and other parts within the chest.

There are seventeen pair which proceed from the vertebræ of the back ; the two first of which communicate with the lowermost of the neck, sending forth twigs to the neck and shoulders. The second pair, as well as the rest, send twigs to the intercostal nerves, by which means they communicate with all the nerves of the bowels in the chest and lower belly. The other branches are chiefly spent on the intercostal muscles, the muscles of the back, and a few branches pass to the abdomen.

Thir-

Thirteen pair of nerves proceed from the vertebræ of the loins and os sacrum. These are chiefly dispersed on the muscles of the loins, hips, and hind-legs. The anterior branches of the first pair of the loins are distributed on the muscles of the diaphragm. Some branches are bestowed on the psoas muscle, and the posterior branches go to the longissimus dorsi. The penis of a horse and the matrix of a mare receive branches from the nerves of the loins, and the testicles and tail from the os sacrum.

Of the Use of the BRAIN.

The *brain* may be justly called the *primum mobile*, or the first mover of the whole body. Therefore we cannot wonder, that the author of nature has taken such care to preserve it from external injuries, by inclosing it in a boney case, and by surrounding it with two membranes.

The *dura mater* keeps it from being hurt by the inequalities of the skull, and one of its foldings or partitions, as has been observed, prevents one of the hemispheres from lying heavy on the other, when the head leans on one side; and the other, which is posterior, prevents the hinder lobes of the brain from pressing on the cerebellum. The sinus within this membrane not only serves to render the circulation of the blood more free, but also by its winding hinders the blood from passing to the heart with too great a rapidity.

The *pia mater* is very useful to support the blood-vessels which penetrate into the soft substance of the brain, especially the cortical, which, according to some, serves to secrete the animal spirits, which pass from thence into the medullary substance, formed by the union of the excretory canals of the glands of the cortical substance, and is afterwards distributed to the nerves in all parts of the body. For this purpose there is thought to be a common receptacle of the spirits called the *emporium*. This opinion seems to be established by the following experiment. A considerable quantity of the cortical part of the brain was taken off with a knife, not with

withstanding which, the man continued to move as if his brain had been entire. Likewise, when persons have been wounded in the head, and a part of the brain has been carried away, they have no paralytic disorder in any part of their bodies.

By the assistance of the nerves, the impression of external objects is transmitted to the brain, arising from a motion excited therein. The nerves may be shaken or put in motion at their origin, at their extremities, and in the interjacent parts. When the nerves are shaken at their origin, by the motion of the animal spirits, the impression made upon the mind is an idea. If it is performed in the middle parts, or in their extremities, and the motion is communicated to the mind, it is called sensation. This sensation will be either uneasy or agreeable, according to the degree of the impression made by external objects, that is, as they are either slight or violent. For the same reason we are to believe that the impression which causes pain differs only in degree from that which produces tickling.

But it is proper to observe, that there are organs which receive the impression of certain objects, by reason of which the mind has a particular sensation, while the other organs, though subject to impressions from the same objects, are not effected thereby. These organs are five; the *eye*, the *ear*, the *nose*, the *tongue*, and the *skin*. The eye perceives light and colours, the ear sounds, the nose smells, the tongue savours or tastes, and the skin the different qualities of bodies, such as smoothness, roughness, and the like.

Some of the organs require the immediate application of the body thereto, as to the skin in feeling, to the tongue in tasting: but to see colours, to hear sounds, and to smell odours, the body itself may be at a distance, though the light, the air, and particles flying off from bodies, immediately affect the eye, the ear and the nose.

In consequence of an impression made by any body upon an organ, there is a sensation excited in the mind; and yet we are apt to confound some things together which we ought to distinguish: the action of the object, as the pricking of the skin with a thorn, the shaking of
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the fibres by that object, the sensation, and the judgment of the mind, which attributes that sensation to the part that is prickt; though it is certain it is in the mind.

The organs of FEELING are the *nervous papillæ* of the skin.

The organ of TASTING is the TONGUE. This is a fleshy body, capable of a great number of motions, and is seated in the cavity of the mouth, between the upper and lower jaws. The back part of the tongue is more thick and large than the fore part. Anatomists call it the basis; it is closely connected to the os hyoides, to the larynx or top of the windpipe, and the pharynx or upper part of the gullet. The tongue is connected below by a membranous ligament called the bridle, and to the lower jaw, the os hyoides, the styloide processes of the temporal bones by means of muscles.

The upper part of the tongue is divided into two parts, by a line running along the middle of its length, which is called the *linea mediana*. The membrane which covers the tongue has its surface beset with several eminences, called the papillæ of the tongue, which are supposed to be the extremities of the nerves of this part, though some of them seem to be rather glandulous than nervous, such as those at the basis of the tongue, which are the largest.

The tongue is chiefly composed of very soft fleshy fibres, part of which belong to the tongue only, and part are a continuation of the muscles. The first are called the intrinsic muscles of the tongue, and consist of two plains, which run superficially on the upper part of the tongue, whereof the uppermost is composed of longitudinal fibres, and that underneath it of transverse fibres, which in part are intermingled, and some of their extremities terminate at the edges of the tongue, and others at the point. The fibres of the tongue, which are a continuation of the muscles, are of three sorts; longitudinal, transverse, and vertical.

When a horse is bled under the tongue, great care must be taken not to prick the artery, for then it will be difficult to stop the blood, unless the fungus, whose
virtues

virtues are so lately known, or the puff-ball are applied to the part. Likewise the same caution must be used with regard to the bridle. The tongue of a horse is likewise of great use in chewing and swallowing the aliment.

Tasting is a sensation excited by the different flavours of aliments that are made use of: these being applied to the papillæ of the tongue of the least kind, their moisture dissolves the salt of the aliments, which affecting the papillæ, excite the idea of tasting. This is assisted by the papillæ of the palate; for men that have lost their tongues have been capable of tasting.

The NOSE is the *organ* of SMELLING. The nose is lined with a membrane called the *pituitary membrane*, which likewise covers the cells of the ethmoide bone, the spongy bones or inferior laminæ of the nose, and the internal sides of the inward sinuses of the lachrymal ducts. It is beset throughout its whole extent with glandulous grains, which supply it with a mucilaginous liquor that always keeps it moist. That part of this membrane which covers the cells of the ethmoide bone receives the fibres or threads of the first pair of nerves, and some branches of the fifth pair. These receive the particles of odoriferous bodies, which excite a sensation that raises in the mind the idea of smelling.

The EYE is the *organ* of SEEING: It is universally known that the eye is seated in a cavity of the head, called the *orbit*, whose shape resembles that of a cone. It is covered before with the eyelids. These are prolongations of the skin, and have a cartilage which runs along their edge, in which the hairs are placed. They are covered with muscles which serve to put them in motion. The angles or corners of the eye are the places where the lids unite; the greater of which are next the nose. In the body of the cartilages above-mentioned lie several sebaceous glands, whose excretory ducts open on the edge of the eyelids.

There are two muscles belonging to the eye-lids; that which raises the upper called the *attollens*, and the *orbicular*, which serves to shut them. The globe of the

eye is joined to the eyelids by a thin transparent membrane called the conjunctive, and vulgarly the white of the eye. This membrane is connected by one of its extremities to the circumference of the cornea, and by the other to the edges of the eyelids. It is likewise connected in its middle part to the edges of the orbit. It lines the inside of the eyelids and the anterior part of the coat of the eye, called the *opaque cornea*, which is covered with aponeuroses of the strait muscles of the eye.

On the upper part of the globe of the eye, on the side of the lesser angle, is a conglomerate gland called the lachrymal gland, whose excretory duct having crossed the conjunctive, discharges the lachrymal lymph on the globe of the eye, which afterwards runs into the two apertures which are the greater angle of the eye, on the edge of the eyelids. These apertures are called *lachrymal puncta* or points, which answer to two ducts that unite into one common duct, and this communicates with a bag called the lachrymal sack, seated on the side of the great angle of the eye, in a hollow channel on the side of the orbit, which is partly hid by the tendon of the orbicular muscle. The lachrymal sack answers to a membranous duct called the lachrymal duct, lodged in the nasal canal, which unloads itself into the nose.

There is a small red body in the greater angle of the eye, called the *lachrymal caruncle*, which is glandular, and secretes a fluid, like that of the glands, on the edges of the eyelids. This was formerly, though improperly, called the lachrymal gland.

The GLOBE of the eye is composed of membranes and humours. The common membranes are the *cornea*, the *uvea*, and the *retina*: the proper are the *arachnoide* and the *vitreous*. The humours are the *aqueous*, the *chryselline*, and the *vitreous*.

The *cornea* incloses all the parts which make up the globe of the eye. It is transparent before, and opaque through the rest of its extent. The transparent part is called the *transparent cornea*; and the opaque part the *sclerotic*.

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The second membrane called the *choroide*, is pierced before with a round hole called the *pupil*, the exterior part of which is called the *iris*. The pupil will contract in a great light, and dilate in obscure or dark places, or as objects are near or distant. These motions depend on fibres on the internal surface of the iris, some of which are circular, the others longitudinal. Some call this part of the choroide the *uvea*, and the remainder of this membrane the *choroide*. The whitish circle which is closely connected to the sclerotic on the edge of the transparent cornea is called the *ciliary ligament*.

That part of the choroide comprehended between the ciliary ligament and the optic nerve, is composed of two very fine laminæ, the inner of which is spread over with a blackish humour.

That third membrane is called the *retina*. It lines the internal surface of the last mentioned membrane, and advances as far as the chrystalline, where it terminates. It seems to be of a whitish substance, almost transparent, not much unlike a wet wafer: but when washed with water it appears to be a fine web with its vessels. It is formed by the expansion of the optic nerve, and is the immediate organ of vision.

The *humours* of the eye are three. The first is the *aqueous*, and lies in the fore part of the eye, between the transparent cornea and the iris, and the space between the posterior part of the iris and crystalline humour. To which places they give the name of chambers. Thus there is the anterior and the posterior chamber.

The second humour is called the *crystalline*, which is seated immediately after the aqueous, behind the iris, and over-against the pupil. Its shape is lenticular, like the eye-glass of a small telescope, and is of a pretty firm consistence. Some think it has a particular covering called the *arachnoide*, but it is only a continuation of the membrane of the vitreous humour.

The third humour is the *vitreous*, which is hollow in the anterior part, in which it receives the posterior convexity of the chrystalline. The membrane in which
this

this humour is contained forms several cells, besides a bag for the crySTALLINE.

The eye is not only preserved from external injuries by the boney cavity in which it is inclosed, but also by the eyelids, which by their tendinous cartilages close very exactly. The lymph, which constantly moistens the fore part of the eye, preserves the transparent cornea from the impression of the air: which lymph afterwards passes into the nose by means of the lachrymal points, and the ducts that answer thereto, unless they are obstructed, and the lymph runs down the cheeks like tears.

The membranes of the eye serve to contain the humours, and the humours are of use to change the direction of the rays of light, in such a manner as to cause them to be re-united on the retina, in order to make such impressions as are capable to excite that sensation which is called vision. This re-union of the rays of light which proceed from the same point of an object, and which is made on the retina, is absolutely necessary, otherwise vision would be imperfect, as it happens to those whose crySTALLINE is too convex; in which case the rays unite before they come to the retina.

When the eyes are flat, or are become so with age, or more properly, if the crySTALLINE has lost its convexity, the rays will not unite on the retina, unless the object is at a distance. And when the crySTALLINE has lost its transparency, as when a cataract is forming or formed, they can make no impression on the retina strong enough to cause vision.

The best way of examining a horse's eyes is to take notice whether he wrinkles his brow when he is first brought out of a dark stable into a strong light, and whether he looks upwards as if to receive more light. These if the pupil is large at the same time, are very bad signs. For in the dark the pupil should be large, and small in the light: and therefore the best way will be to examine in a small light, and in a great light, to know if the eyes are good.

The *organ* of HEARING is the EAR. The outward ear has already been taken notice of. The passage or conduit

duit of the inward ear is partly cartilaginous or gristly partly membranous, and partly boney. The cartilaginous is a continuation of the outward ear. The membranous is a continuation of the skin which covers the conduit, and fills up the void spaces which the other had left. The skin is pierced with a great number of holes which answer to glands under the skin. These are called *ceruminous glands*, because they supply the ear with wax. The boney part is closed at the extremity by a very fine membrane, called the drum, which is placed obliquely; the upper part of its circumference being turned outward, and the lower inward: The direction of this conduit is oblique, for it advances from behind forward.

The barrel or body of the drum is a cavity, whose surface, which is very unequal, is covered with a membrane which is a continuation of the pituitary of the nose. In this barrel there are two ducts, two apertures, called windows, four little bones, and a branch of the fifth pair of nerves.

The ducts are the anterior and posterior: this communicates with the cells of the mastoide process; the anterior has a communication between the barrel and the mouth, and is called the tube or trumpet of *Eustachius*, because it is very narrow near the box, and grows wider till it enters the mouth. This tube is boney at the beginning, and the rest of it is partly gristly and partly membranous. In the barrel of the drum, immediately above the tube, is a semi-canal, which lodges in the muscles of the *malleus* or hammer.

The *fenestræ* or windows are either oval or round; and it is by means of these two apertures the barrel communicates with the labyrinth.

The *little bones* are, the *malleus* or hammer, the *incus* or anvil, the *stapes* or stirrup, and the orbicular bone. The head of the hammer has two eminences and a cavity for its articulation with the body of the anvil. The handle of the hammer is glued to the membrane of the drum.

The *anvil* has a body and two branches: in the body are two cavities and an eminence which serve for its arti-

articulation with the hammer. The longest branch is a little crooked, and terminates in a superficial cavity, to receive one of the convexities of the orbicular bone, while the other convexity of the bone is received into a superficial cavity in the head of the stirrup.

The stirrup has an oval base, with two branches which unite to form a head. The branches are a little hollow on their internal surface, like grooves, into which a very fine membrane is fixed, which closes the space between the branches. The base of the stirrup shuts the oval window, and the round window is shut up by a very fine transparent membrane.

There are three muscles in the barrel of the drum; two of which belong to the hammer, and the third to the stirrup. There is a little nerve observable in the barrel, commonly called the cord of the barrel: it is a branch of the fifth pair, which runs along the internal surface of the drum, and penetrates the boney duct which incloses it.

The deepest part of the internal ear is known by the name of the *labyrinth*. It is composed of three parts; the *cochlea* or snail, the *vestibulum*, and the *semicircular canals*. The cochlea is seated within and without; the semicircular canals backward; and the vestibulum in the middle.

The *cochlea* consists chiefly of a boney pipe or conduit, which makes two spiral rounds and a half. The cavity of this pipe lessens gradually, and is divided throughout its whole extent into two parts, supposed to resemble flights of stairs, by a spiral partition, one part of which is boney, the other membranous. The two flights begin at the vestibulum, into which the superior opens, while the other terminates at the round window.

The *vestibulum* is a small cavity, irregularly round. It is covered inwardly with a membrane beset with many vessels. It has seven apertures or holes for the passage of the blood-vessels and nerves which penetrate into this cavity. Five of these holes correspond with the semicircular canals, the sixth to the oval window, and the seventh to the external flight of the cochlea.

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The *semicircular canals* are distinguished into the upper, middle, and lower. The upper joins by one of its extremities to the lower, insomuch that these conduits make but one aperture into the vestibulum. The soft part of the seventh pair of nerves is distributed into these conduits and the flights of the cochlea.

HEARING is a sensation excited by sound received into the ear ; and sounds are produced by the vibrations of the air. The shape of the external ear favours the reception of the air which is put in motion by sonorous bodies ; and its cartilaginous make serves to preserve the sounds in all their strength. Besides, the obliquity of the tube through which the sounds are received, increases their force, by giving them different reflections. The ear-wax serves to binder filth and insects from getting into the ear, but when the quantity is too great, it is a cause of deafness.

When sounds reach the drum of the ear, it is put in motion, and the action of the muscles of the hammer being to keep it more or less braced ; it is by this means accommodated to the degree of strength of the sound.

This membrane of the drum is not absolutely necessary for hearing ; because some persons can hear better through the mouth than by the ear. But yet it is absolutely necessary to preserve the parts contained in the barrel of the drum from external bodies, because those animals which have the drum broken become deaf soon after.

The *Eustachian tube* serves to discharge the lymph, which proceeds from the glands of the membrane which covers the cells of the mastoid process ; and the use of the lymph is to supple the soft parts of the drum. This tube also serves to let out the air contained in the drum, while the membrane of the drum is drawn inward by the action of the internal muscle of the hammer ; for as a loss of hearing is the consequence of the obstruction of the tube, it serves to prove what has been just asserted.

The little bones contained in the drum, being shaken by the sounds that reach to the membrane of the drum, they communicate their motion to the innate air which occupies

occupies the spaces that are left by the soft part of the auditory nerve, as it runs through the different parts of the labyrinth, communicating its vibrations to these nervous ramifications, and so excites the sensation of hearing. Some suppose the innate air receives its vibrations from the air contained in the drum, which is shaken at the same time as the little bones; and that these vibrations are conveyed to the innate air by means of the round window, which is only shut as has been said, by a very fine membrane.

Of the Distribution of the ARTERIES and VEINS of a HORSE.

THE ARTERIES are vessels which receive the blood from the heart, to distribute it into all the parts of the body; and the VEINS are vessels which carry back part of the blood, which had been distributed by the arteries to the heart. These vessels may be easily known from each other in a living body, for the arteries have two motions, which the veins have not; in one of which the arteries are dilated, and in the other they are contracted: the first is called the *diastole*, and the other the *systole*.

The capacity of the arteries constantly diminishes as they go farther from the heart; whereas the veins increase as they approach nearer this organ. This particular disposition as to the capacity of the vessels, which gives them nearly the shape of a cone, is very advantageous to increase the course of the blood in the arteries; for it is well known that the current of a fluid augments, when it passes from a large canal into one that is more narrow. But what is said of the arteries only regards their principal trunks; for the branches after their division have a cylindric figure, which renders the capacities of the vessels equal in part of their extent. These are subdivided into a vast number more, which at last grow so small, as not to be discovered by the naked eye.

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There are vessels which proceed from hence, called *lymphatic arteries* and *veins*, which admit nothing but the watery part of the blood, unless in case of inflammations. These lymphatic vessels should be distinguished from those that accompany the conglobate glands, which are perceived in great numbers on the surface of the liver in most animals. These last are called *valvular lymphatics*, on account of the great number of valves which they contain.

The number of the coats of the blood-vessels are not so easy to determine as some imagine. Some reckon five, the *vasculous*, the *cellulous*, the *tendinous*, the *musculous*, and the *nervous*. However the musculous is the most considerable, and has circular fibres.

All the arteries begin with two principal trunks, one of which proceeds from the right ventricle of the heart, and is distributed into the lungs : this is called the *pulmonary artery*. The other, called the *aorta* or great artery, arises from the left ventricle, and is distributed through all parts of the body, not excepting the heart and the lungs.

The heart receives two arteries called the *coronary*. They are distributed into the substance of the heart and its auricles. The orifices of these vessels may be seen in the aorta, over-against the sigmoide valves. The aorta then proceeds a little obliquely to the right, from whence returning backward to the left, it forms a semicircle ; from the upper part of which proceed three considerable branches, which have the name of the *upper* or the *ascending aorta* ; and the other part which runs downward is called the *lower* or *descending aorta*.

The three branches which compose the ascending aorta have particular names : one branch to the right, is called the *right subclavian* ; that on the left is called the *left subclavian* ; and the branch in the middle is the *left carotid* ; the *right carotid* proceeds from the subclavian on the same side.

The *subclavian arteries* go off almost transversely under the clavicles, whence they are called *subclavian*. As they pass along, they send out three principal branches ; the first descends inwardly along the ribs near the sternum,

sternum, and bestows twigs on the pericardium, mediastinum, and intercostal muscles. The *vertebral* or *internal cervical* enters the holes in the transverse processes of the vertebræ of the neck, sending twigs to the adjacent muscles. This artery, after having sent out branches in its passage, at length pierces the dura mater, and enters the skull through the great hole of the occipital bone, and joining with others forms the vertebral artery. Then advancing to the sphenoid bone, it unites with a posterior branch of the internal carotid, and is lost in the posterior lobe of the brain.

The *cervical artery* divides into two branches; the former of which is distributed into the anterior parts of the neck, the windpipe, the gullet, and pharynx. The other branch goes to the muscles of the neck and the adjacent parts.

The *diaphragmatic superior* descends along the pericardium, on which it bestows twigs, and is afterwards lost in the upper part of the midriff. The *upper intercostal* proceeds from the lower part of the subclavian, and sends branches along the lower edge of the ribs, intercostal muscles, and the pleura.

The subclavian, leaving the chest, sends off the *thoracic artery* to the fore part of the breast: another branch runs down the fore leg; a third to the muscles of the shank, and a fourth to the parts beneath it.

The *right carotid* proceeds from the subclavian, and ascends upward by the side of the windpipe, and coming to the larynx, divides and sends one branch into the skull. The other branch bestows a twig on the larynx, another on the tongue, a third on the jaws, a fourth on the occipital muscles, and a fifth, to the ear, besides several others.

The lower aorta is properly a continuation of the great artery, which descends along the back and loins, it afterwards divides into two branches called the *iliac*; before which, above the midriff, it sends forth the lower intercostals, with the bronchial artery that accompanies the branches of the windpipe to the lungs. When it is just below the midriff, other branches proceed from it, namely, the *phrenick arteries*, which are lost in the midriff

midriff and mediastinum. Passing still farther, it bestows several branches on the stomach and intestines; such as the cœliac, the splenic, the upper mesenteric, and the emulgent; which last go to the kidneys: and below these arise the spermatic, which go to the testicles. Then the lower mesenteric, which with the upper is sent to the mesentery.

Then the great artery passes to the top of the os sacrum, where it divides, as mentioned above, into the *iliac*, which again are subdivided into the external and internal. From the latter arises a branch which is bestowed on the psoas muscle, and other muscles of the buttocks. Another, called the *hypogastric*, runs to the strait gut, the yard, the matrix, the bladder, the prostate gland, and to all the parts contained in the pelvis. The internal iliac sends off the epigastric, which turning forward creep along the rim of the belly, where they meet with the *mamillary*: another branch goes to the genitals of both sexes, and communicates with the hypogastric.

Afterwards the iliacs go to the thighs, and as they pass downward, change their name to the crural arteries, which supply the hind legs and feet with many considerable branches.

It would be endless to describe all the lesser branches, which divide like the boughs of a tree, whence they arise, and where they are lost. And, to say the truth, it is entirely needless to a farrier, because he never performs the operations on a horse, as a surgeon may have occasion to do on a man. For instance, if it were necessary to amputate a limb, it never would be done, because a horse could not support himself afterwards, nor perform any business: or if he could make a shift to hop about in a miserable manner, nobody would be at the charge of keeping him. I shall therefore mention the veins in as cursory a manner as I have done the arteries: though some of these are necessary to be known, as they frequently come under the consideration of the farrier.

I observed before, that the VEINS take up part of the blood which was distributed throughout the body, to be
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returned back to the heart. They are imperceptible at first, but they soon unite with each other, and form larger branches, which unite more and more, and grow larger as they approach nearer, till the veins beneath the heart form one trunk, which is called the *vena cava ascendens*. The upper great vein above the heart is called the *descending cava*, because it carries the blood downwards, as the other does upwards.

The veins have no apparent motion; but have semilunar valves in their cavities, which facilitate the motion of the blood towards the heart. In their ramifications there are generally two veins to one artery, and there are likewise veins where there are no arteries. Their trunks are much the same in most subjects, but their ramifications differ greatly; and even those on one side of the body are not always like those on the other.

The *pulmonary vein* proceeds from the left auricle of the heart, and at first forms a sinus; and soon after divides into four, then into innumerable branches, which are distributed through the lungs.

The veins in general have the same names as the arteries which they accompany. Those of the brain unload themselves into the sinuses, and these again into the external jugulars and cervicals: from thence the blood goes down to the subclavians, which joining together make the *cava descendens*. The internal jugulars are seated by the carotid arteries, and receive the blood from all the parts which the carotids serve, except the pole, part of the face and the neck, whose veins enter into the external jugulars. These last are those large veins which run the length of the whole neck, one on each side, near the gullet, and are constantly opened in most cases that require bleeding, because they are the safest and the largest.

Two of the cervical veins descend through the holes of the transverse processes of the vertebrae of the neck, and two through the great holes of the spine, and one on each side the spinal marrow. These join at the lowest part of the neck, and empty themselves into the subclavians, and at the interstices of the vertebrae communicate with each other.

The subclavian veins pass along by the subclavian arteries, under the channel bones, and not only receive a great part of the blood from the veins of the chest, but likewise from all the veins which run along the outward part of the breast, legs and feet. The plate veins which open into the subclavian run along the inside of the fore leg towards the knee. They are frequently opened for lameness of the breast, and on other accounts, with success.

Below this are the shank veins and the shackle veins, which communicate with the plate-veins. The shank-veins run on each side of the hollow of the back-sinew, between it and the shank; and the shackle vein is that branch which runs across the back sinew, and communicates with the shank-vein on each side, under the place where the horse is shackled. This cannot readily be seen or felt, but when the horse is very hot, and then one or more branches may be readily seen in the place abovementioned. Sometimes there are varices in this vein, and then it is but too evident; for then it is a sign of the weakness of the limb, and must be removed by manual operation.

These and the shank-veins communicate with those on the coronet and toe. Those of the toe are often opened for disorders of the feet; and those about the coronet are frequently cut in two in the cure of the quitters, without any bad consequence.

The *vena cava ascendens* lies in the lower belly, as also the emulgents from the kidneys, the lumbal and spermatic veins, the sacra, the iliacs, and the epigastric, which are named after the arteries. The farriers have particular names for some of the veins, as the *kidney veins*, near the loins, the *flank* and *spur-veins*, which are often wounded with the spurs. The *liver-veins*, on the side of the lower belly, which are often opened for diseases in the bowels. That of the rump, they call the *tail-vein*, which they frequently open, or scarify the tail, in the staggers and other disorders of the head.

There is one large vein in the lower belly called the *vena portæ*, whose branches arise from all the branches
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of the cœliac, and two mesenteric arteries, except those branches of the cœliac and two mesenteric which are bestowed on the liver. These being united into one trunk, enter the liver, and is there distributed like an artery, and has its blood collected and brought into the cava by the branches of the cava in the liver. The vena portæ carries blood to the liver instead of an artery, for the separation of the gall; a slow circulation in this case being necessary.

The thigh-veins and the crural-veins empty themselves by entering into the external iliacs and epigastrics, as the shank-veins in the fore legs communicate with the subclavians. The thigh vein runs along the inside of the thigh, and may be opened in fevers, in lameness of the hips, and in disorders of the loins and kidneys. The crural veins lie on each side the inttep, and answer to the shank-veins in the fore legs.

Of the GLANDS and LYMPHATIC VESSELS.

GLANDS are known by common people by the name of *kernels*; and are designed to separate some fluid from the blood, or to bring that to perfection which is called lymph. This gives occasion to divide the glands into two sorts, the *conglomerate*, and the *conglobate*. These last are also called *lymphatics*. Of these I shall give a particular account, because horses as well as other animals, are often afflicted with diseases of the glands.

In order to this, we must observe that the blood consists of two parts, the red, and the lymphatic, commonly called serum. Besides these, there are several other humours blended therein. These different humours are separated by particular organs called *glands*; and this separation is called *secretion*. This supposes the blood to be in such a sound state, as to supply these humours, and that its fluidity and progressive motion should be regular.

Of the organs called glands there are only two sorts, the *conglomerate*, and the *conglobate*. The use of these

last is to receive and elaborate the lymph, by attenuating its parts, such as the axillary and inguinary glands. Other conglobate glands receive the chyle after the digestion of the aliment, besides the lymph which is carried thereto by the lymphatic veins of the adjacent parts : these are the glands of the mesentery.

The conglomerate glands are designed to separate such humours from the blood as are confounded therewith : such as the liver, which secretes the bile ; the parotids, which separate the saliva ; and the kidneys, which secrete the urine, &c.

The glands are bodies endowed with peculiar vessels, as the secretory and excretory ducts ; as also with nerves, arteries, and veins, as well sanguinary as lymphatic. But we must observe that the sanguinary and lymphatic arteries are continued to vessels of the same kind. Thus the arteries that carry the blood are continued to the sanguinary veins, and the arteries that convey the lymph are continued to the lymphatic veins. As also that the secretory duct takes its rise at the place where the lymphatic artery unites with the vein of the same name. And likewise that the lymphatic artery proceeds from the capillary arteries that carry the blood.

The secretory vessel which makes up the greatest part of the body of the gland is lined with a kind of down, which is of different colours, according to the nature of the fluid which is separated by the gland. Now suppose this down is originally imbedded with the same fluid that the gland secretes, we may then suppose it will let nothing pass through but what is of the same nature ; like a sheet of cap-paper, which being dipt in oil or water, will let nothing pass through but a fluid of the same kind into which it was dipt. Or as a bit of cloth saturated with oil, being plunged in a vessel wherein there is oil and water, will let nothing pass through it but oil.

In consequence of this, if we conceive the blood to contain the different humours which are to be secreted by the glands, and which being carried to the organ by the sanguinary artery ; it will supply the lymphatic artery, continued thereto, with a part of the lymph which

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it contains, which abounding with the different fluids to be separated therefrom, will suffer the fluid to escape, which is analogous to that wherewith the down was imbuted ; while the other humours, which have no relation thereto, will follow the course of the lymphatic vessel, which will again unload itself into the mass of blood, and with it be transmitted to the gland designed to separate another fluid.

The fluid which is introduced into the secretory vessel, continuing to pass through its different ramifications, will at length reach the excretory duct, and then it will deposit the liquor which is contained in reservoirs formed like vesicles, as is observable in the glands of the stomach, the guts, &c.

The fluids separated by the conglomerate glands are of three kinds ; the first are called recrements ; such are those that, being once separated from the mass of blood, mix with it again for different uses ; as the unctuous juice contained in the cells of the marrow, the fluid of the pericardium, that of the ventricles of the brain, cerebellum, &c.

The second sort are the excrementitious fluids ; that is, such as being once separated from the mass of blood, never return into it again ; or if it should so happen, would prove prejudicial to the animal : as the urine, sweat, and the matter of insensible perspiration.

The third kind are such fluids as are in part recremental, and in part excremental : that is, a part of these fluids enter into the mass of blood, while the other part never does, but is thrown out of the road of circulation. Such are the saliva, the bile, the gastric juices, as also the intestinal and pancreatic juices.

The first and most considerable conglomerate gland in the whole body, is that which is contained in the inner part of the skull ; and is the *brain*, the *cerebellum*, and the *medulla oblongata*. We may also reckon the *choroide plexus*, and that which is called the *pituitary gland*. This separates the animal spirits.

The principal in the face is the *lachrymal gland*, and those which compose in part the *lachrymal caruncle*, as also those which are placed on the edge of the eyelids,

called the *ciliary glands*. The pituitary membrane of the nose is beset with a great number of glands, to secrete the mucus. The glands whose excretory ducts empty themselves in the mouth, are in great number; as the parotid and maxillary glands, the sublingual, the buccal, the palatine, the almonds, the small glands on the surface of the uvula, and those of the pharynx. These separate the saliva and other fluids, to mix with the aliment, and to render swallowing easy. The gland under the tongue, called the *sublingual*, is the seat of the *strangles* in young horses.

The ears have the ceruminous glands which supply them with wax, and some small ones in the barrel of the drum, and in the eustachian tube. The chest has the fewest conglomerate glands, among which some reckon the thymus, and the small glands supposed to be contained in the pleura. The bronchial glands secrete a lymphatic fluid into the cavity of the bronchia, and the tracheal into the windpipe. Add to these, those on the inside of the larynx, and those placed on the convex part of the epiglottis.

The lower belly has a greater number of conglomerate glands than any other part; for besides those of the peritonæum, there is the pancreas, which separates the pancreatic juice, the liver which secretes the gall, the kidneys which separate the urine: as also the glands of the stomach and intestines, the capsulæ atrabiliarie, the prostrate gland, and the glands in the spongy web of the urethra. Add to these the glands on the inside of the bladder, which separate a fluid to guard it against the sharpness of the urine.

There are also glands in the matrix and vagina of mares, and the glandulous bodies which surround the urethra.

To all these we may add the mucilaginous glands which supply the joints with a fluid to render them supple, to which the name of *synovia* is commonly given.

As to the *conglobate glands*, there is none observable in the skull, unless you will give that name to some glandulous grains which are placed along the superior longitudinal sinus. There is a conglobate gland which touches

touches the parotid, and another on the basis of the lower jaw. This has given room for some to divide the maxillary and parotid glands into conglobate and conglomerate. There are likewise conglobate glands which accompany the internal jugular veins, and others that are placed on the posterior part of the neck, some near, and some farther off the occipital bone.

In the chest there are the dorsal, which are two, connected to the gullet. There are also glandulous grains of the same kind at the basis of the heart.

In the lower belly there are the *gastric*, which are seated on the upper orifice of the stomach. The *hepatic*, which are placed near the entrance of the vena portæ, under the hollow part of the liver, and others near the biliary duct. The *splenic* lie on the internal surface of the spleen, and the *epiploic* on the upper part of the caul. Some lie near the reservoir of the chyle; and the *mesenteric* all over the whole length of the mesentery. The *iliac* touch the vessels of the same name; and others are seated on the internal surface of the os sacrum.

The three axillary glands lie under the armpits; there are likewise several in the groins, but not so large in horses as in men. Lastly, there is one remarkable in the middle of the thigh, commonly called the *pope's eye*.

Besides the *lymphatic vessels*, formerly mentioned, there is another kind, called the *valvular lymphatics*, on account of the great number of valves contained therein, and which may be known on the outside by the number of knots to be seen thereon. These vessels may be discovered on the surface of the viscera, and more particularly the liver, where they form a kind of network. They likewise attend the greatest part of the veins, as well as the conglobate glands in which these vessels seem to terminate. Then other branches proceed from hence, generally larger than the former, which pass on to the next conglobate glands.

The vessels are transparent, because they consist only of a thin membrane, through which a clear fluid may be perceived, called lymph. They discharge this into

the receptacle of the chyle, the thoracic duct, and some of the veins which they accompany. This lymph is taken up again by these vessels in all parts of the body, and ought to be looked upon as the remainder of that which has been employed in nourishment, It serves to dilute the chyle, and to supply it with parts that contribute to nourishment. We are not sufficiently acquainted with the origin of these vessels, nor their distribution through the body, so as to give an exact description of them. In general they may be looked upon as veins, which carry a fluid from the circumference of the body to the centre, to which the valves contained therein greatly contribute.

Of MANAGING HORSES on the ROAD.

GENTLEMEN who can take their time in going a journey, should ride but a short stage the first day, a longer the second, and a longer still the third. When the journey is very long, it would be proper to rest the fourth day, that the horse may have time to recover his spirits and vigour; after which he will pursue the journey with ease. Some are ready to think that this is entirely needless, and that they have nothing to do but to push forward; but they are often deceived, for we have seen many that were obliged to leave their horses behind them, and to hire fresh ones.

Those that travel in hot weather, which always causes a horse to perspire greatly, should let him drink a little now and then, to supply the loss of the fluids, but never much at a time. This method would likewise cool his mouth, and refresh his spirits. But when you come within a mile and a half or two miles of the place you intend to bait at, whether at noon or at night, let him drink a little; after this ride him gently, and yet so as to warm the water in his belly, but not hard, for this is dangerous, and may render him pursey. This precaution is necessary; for when a horse has his belly full of cold water, there may danger of a
coagula-

coagulation of the blood in the stomach and lungs, which may produce inflammations of very dangerous consequence. However, the nearer you come to the inn the slower should be your pace: otherwise the horse must be led about, that he may cool by degrees.

If the weather will not permit this, and there is a necessity of putting him directly into the stable, don't take his bridle off directly, but stay till he has recovered his breath. Then loosen his girths, take off the crupper, and put straw between the pannels of the saddle and his back. This done, let him be well rubbed in every part, till he is quite cool, letting the saddle remain as before all the time. If there is no opportunity of watering your horse on the road, as abovementioned, don't give him water at the inn while he is hot, nor let him be rode into the water to wash or cool him, for this may cause the blood to stagnate in his limbs, and bring on disorders in his legs very hard to remove. Not that you need be cautious in hot weather to avoid every lake or puddle, if any; for such a transient passage through them may refresh the horse and cool his feet, but can do him no manner of harm.

Having taken care that every thing is done as above directed, it will be proper to let his water be luke-warm, for fear of consequences. What has been said about water may in some measure be applied to his food; for while a horse continues hot, the blood-vessels of his stomach are distended, and it would be improper to feed him while he continues in that condition. Some horses, indeed, have no appetite till the circulation of the blood is moderate, and till they are a little recovered from their fatigue; but this is not always the case. The horse at first may have a little hay given him by handfuls, till he is quite cool, and then the usual quantity of water and meat. But if he is to travel farther the same day, the feed should be but small, and at night he may have a full feed, that is half a peck of oats with a few beans, given him at twice. Remember likewise, that it will be proper to throw a covering over the horse when he comes into the stable, especially if he has been used to be clothed.

Let care be taken that all the old hay be taken out of the rack, and fresh put in ; and if the roads are dusty, it will be proper first to give him a little bran to cleanse his mouth and tongue. He should always have his water before his feed, for this has been found to be most wholesome both by reason and experience. Every one knows the necessity of littering a horse well, for it is not only refreshing, but serves to keep his feet in a proper temperature.

When you are on the road, and the horse seems to want to stop in order to stale, you must not prevent, but rather encourage him ; and this will make him travel with greater ease and pleasure.

When the girths are loosened, it will not be improper to look under the saddle, on each side, to look if there is any hurt ; and if there is, the saddle should be so stuffed as to prevent its pressing on the sore part. Likewise on the road, if your own weight, or otherwise cause the saddle to sink down upon the withers or backbone, you should get it stuffed at the first convenient place you come at.

When you come to the inn, it will be proper to have the horse's feet examined, to see if his shoes are all right, or whether there is any gravel between them and the foot, or whether any thing is sticking in the sole, which must be taken out. If a horse's back should be swelled under the saddle, the best way will be to fill a thin bag with hot horse-dung, and tie it on his back all night.

It sometimes happens that a horse's back is raw, or that the swelling and inflammation has small holes or wounds therein, which some call the *warbles*. In this case bathe the part with equal quantities of spirits of wine and tincture of myrrh and aloes, with a little spirit of turpentine. Or, which is better, with *Friers balsam*. But as this is dear, being generally sold for a shilling an ounce, I shall show how to make it, and then you may be more free in using it.

Take of balsam of Tolu an ounce, benjamin and storax of each three ounces, of myrrh an ounce, aloes and olibanum of each half an ounce ; powder

der these ingredients as fine as you can, and then put them into a stone-bottle; then pour three pints of rectified spirits of wine over them, and shake them well together. In the midst of summer set the bottle in the sun for a week or ten days; at other times by the fire, till the gums are near dissolved, and then it will be fit for use.

This is of singular service to cure sores, wounds, and bruises in men as well as in horses; and a vial of it is very proper to be taken on a journey, for, from twenty to sixty drops may be taken on a lump of sugar, or in a glass of wine, in coughs, colds, cholicks, and many other disorders. Nothing can be better than this when a horse's foot is hurt by any rough or sharp thing upon the road or otherwise.

You may apply it to the foot by making it warm, dipping lint therein, and then applying it to the part when it is cleared of the gravel, thorns, &c. and renew it as it grows dry.

When a horse is very much fatigued or tired after a journey, it will be proper to take two heel nails out of each foot before, to bleed him in the neck, and instead of oats to give him bran a little moistened, for ten or twelve days. Likewise stuff the feet with cow-dung and horse-dung mixed together with chamber-lye, to prevent their swelling, which may sometimes happen after a tedious journey.

Of the MANAGEMENT of a HORSE, so as to prevent diseases.

BEFORE we come to show how horses ought to be treated to preserve them in health, it will be necessary to shew when they are so. That horse may be said to be so, who is well in flesh, that has a smooth glossy coat, that is lively and brisk, performing his business well without being dispirited, that feeds clean, without having a languid or voracious appetite, eating and drinking moderately, never refusing his meat or labour. When a horse has all these qualities, our study

study must be how to preserve him in this condition, not by medicines which are now useless, but by proper care and due management.

When a horse either eats too little or too much, it is by no means consistent with health; for if he eats too little he will be always low, dispirited, and incapable of performing his necessary labour. And if he has a ravenous appetite, he is generally of a lax habit of body, and dungs more frequently than one whose fibres are strong. Therefore it is an absurd opinion to suppose, that when a horse eats a great deal, he will be the better able to do a great deal of work. Besides, these sort of horses have seldom or never good a digestion, which will appear from their excrements being crude, and bringing away the nutritive part of the food, which should have been retained in the body, and from whence strength proceeds. Such a horse as this is frequently dunging upon the road, and never performs a journey to the satisfaction of the rider. One way to remedy this evil, is to put his hay into such a rack or cratch, that he can draw but little out of it at a time, and to mix chopt wheat-straw with his oats, to make him chew them sufficiently, and to prevent his swallowing them too fast.

Hay and grass alone are but low feeding, and a horse that has nothing else will soon lose his flesh, if he is used as a working horse. However, there is a great deal of difference in the goodness of hay, and some sort of land will never produce any that is fit for a valuable horse. In rainy seasons, when the grass is cut down, it is so soaked with water before it is got in, that the virtue of the hay is, as it were, washed out, and nothing remains but insipid stuff, which is not unlike the leaves of tea after the virtue has been drained out by hot water. Likewise when hay is made in hot sunshine weather, a great many of the spirituous, volatile particles fly off, and with them the finest part of the nourishment. But this is often unavoidable, and yet it is infinitely better than the former. That hay is best, which is made in dry, cloudy weather, for then it will remain juicy, and contain all its virtues. Thus those
herbs

herbs that are gathered for the use of medicine are directed to be dried in a shady place, where no wet can come to spoil them.

When you come to examine the goodness of hay, you should always choose that which is hard, of a palish green, that has a quick, lively, agreeable smell, and is fullest of flowers. For that which is musty, damp, soft, or without smell, is not fit for use. Hay, after it is got in, undergoes a kind of fermentation, with heat, which ennobles its juices, and makes them more spirituous and proper for nourishment in the same manner as apples; for there is a very remarkable difference between the taste of those that are just gathered off the tree, and those that have lain some time; for a kind of vinous smell and taste is observable in these last. For this reason, new hay, that is, before it has sweated, as they call it, is never fit for any but labouring horses. This fermentation of the hay is the occasion of its firing when it is stacked before it is sufficiently dry; for the moisture contained therein concentrates the heat, and keeping within the body of the stack, attracts the electrical fire, and so sets it a burning.

The hay that is preserved after part of it is burnt, is very good fodder for horses, by way of change, except that part of it that has suffered too much; and there are some sickly horses that will prefer this to any other, which they may be allowed without detriment: however it will not be proper to give it for a constancy. The time when new hay becomes fit for use is generally about Christmas; but this is best known by its smell, for when it has been kept long enough, the smell is pleasant, whereas before it was deadish or faint: though some will not suffer it to be used till the succeeding spring; but in this case the nose is the best director.

Clover-grass is by some thought to make the best hay, whence comes the proverb, *to live in clover*; but this is a mistake, for if a horse feeds constantly upon it, it will produce various disorders, particularly the cholic. It is much more wholesome when a little of it is mixt with other hay, particularly rye grass. And now I am speaking of this, it will not be improper to observe that

that the time of using rye-grass hay is a little on this side Michaelmas, for then it is tolerably hard and dry ; and after that, when the weather becomes damp, it will imbibe the moisture of the air, and so become unwholesome. For the same reason, all sorts of hay should be taken fresh from the stack, because the weather in winter-time will, in some degree, affect it in the same manner, and render it not so proper to feed a horse with. Hence likewise we perceive the cause why soft hay is not so wholesome as the hard, as it imbibes the moisture of the air more speedily, and is, on that account, more likely to spoil and rot.

In general, short hay is better than that which is long and rank, for the last is more dusty, and should always be well shook before it is used. But there needs no such precaution with regard to short hay, or rather it should always be omitted, for as it is commonly full of seed, it would be shook out, and with it a useful part of the nourishment. For horses are fond of the seed, and will lick it up when it falls into the manger, even before they begin to eat the hay ; which is a certain proof of its utility, if you will allow horses to know what is most fit for their own health. And that this may be granted, is pretty certain, because there are no animals that care to be fed with incongruous aliments, unless driven to it by necessity. And there is no doubt to be made, but that nature is a much better teacher than any man can be, and knows what kind of aliment, and sometimes remedies are most proper, much better than we with all our boasted knowledge. Else whence comes it to pass, that dogs, by a kind of instinct, always have recourse to a particular kind of grass, which on that account we distinguish by the name of dog-grass. As for what is said of its tickling their throats, and so makes them vomit, is contrary to experience.

That hay which stands long on the ground in wet weather, while the farmer waits for a dry season, is commonly rotten at the root, and when it is made becomes full of dust. This should never be made use of when there is any better to be got ; but when you are obliged to use it through necessity, be sure to shake the dust well

out

out of it, and then it will not have those bad effects as will certainly follow without this precaution.

Some affirm a horse will eat more bad hay than good, because it yields little nourishment, for then he will endeavour to supply in quantity what it wants in quality. However this is certain, that when a horse is kept upon bad hay only, let him eat what quantity he will, he will soon become low, dispirited, and poor; for his blood being impoverished, and perhaps viscid, all the wheels of nature will soon be clog'd, and then it will be no wonder that low, chronick diseases should ensue.

The other part of a horse's diet is various in different countries, and yet we can perceive no particular effects from their different kinds of food; for horses in Spain, where they feed with barley, have as much mettle as in other places. Custom has a wonderful influence over the feeding of animals in general, otherwise it would be absurd to imagine, that cows could be brought to live on putrified fish; and yet they have little else in the south parts of Persia, and near the gulph of Arabia, where they bury fish in the ground till it is rotten, and then mix it with water, and give it to their cattle, who swallow it up very greedily. It is the same among mankind; for though they generally agree in the use of bread, it is made with different sorts of corn; and all over the eastern countries they substitute boiled rice in its room. There is no nation, except the Tartars, who use no bread, nor any thing that serves for the same purpose.

It is the custom with us in England to feed our horses with oats, which are not so heating as wheat, nor so cooling as barley. Horses in general are fond of them, though they have been used to barley or other grain. In many countries they make them into bread or cakes, and almost live upon them, particularly in Scotland, and the northern parts of England; which shows they have no bad qualities; for the people there are as strong and robust as in other parts of the world. But if they are given to horses with too free a hand, these are supposed to heat overmuch: but however this be,

we are sure that it will cause them to neglect their hay. But though oats are never so cheap, it is a bad practice, unless the horse has a great deal of exercise, for otherwise he will be apt to fall into fevers, or breed surfeits.

The best oats are heavy, with a thin shell, and which rattle when they are poured into the measure. The northern countries, where the ground is cold and moorish, produce the best oats, and large quantities are sent from thence to London, sufficient to supply all the parts round about it. Sometimes when the passage is long, they are apt to grow musty, by being kept so long in the hold of a ship. But if they are spread about on a deal-floor, and often turned, they will come to themselves, and recover their sweetness. And yet fine delicate horses should be fed with the freshest and newest oats, for these are found by experience to agree best with their constitutions. Let the colour of oats be what they will, if, they are sweet, firm and hard, we may depend upon their being good, and then we need not trouble our heads about their aspect. However, if they happen to be husky, if we encrease the allowance, they will answer the same ends as if they were otherwise ; for some country farmers are so sparing, that they will feed their horses with husks only.

The common opinion, that plentiful feeding with oats makes a horse hot is very absurd, for if they rendered a horse hot, he would consequently be more fond of drinking : but we find by experience, that he wants less water with oats than with hay.

Other kinds of corn would agree very well with horses, if they were accustomed to eat it, but without that, it has unexpected effects. Thus wheat, as well as barley, will purge horses when it is given to them at first, and yet when they are a little used to it, no such consequence will attend it. However, wheat is too chargeable a diet to be given constantly to horses ; and yet it will not be amiss to mix a little with the oats of running horses, hunters, or the like. And as change of diet, as well as exercise, has a tendency to keep
horses

horses in health, they may sometimes be allowed a little barley or malt mixt with their oats and beans.

Beans are another part of a horse's diet, and may very properly be allowed him in some cases, especially when they are upon the road, or when it is their business to draw in a coach or cart. They yield very strong nourishment, and may be very properly mixt with bran or chaff. If you can have them split, it will be best, for then there will be no danger from the red bug that is said to breed among them. Peas differ little from beans, but they are seldom given to horses on account of their price. In some places, as in Scotland, they give their horses chopt straw; in others pease-straw, or pease-haulm; and in others again, a great deal of bran. But this last is the properest diet for sick horses, when scalded. But if too much of it be given to sound horses, it renders them weak, and brings them low. Though when it is new and sweet it is best, and when old and musty very pernicious.

The proper allowance for horses in a day is very different, for some require more, some less. Eight quarters or quarts in a day of oats, with one of beans, is as much as any horse needs to have when he labours, and those that do but little work should have three or four quarters.

When horses are turned out to grass, and kept in the fields, they are always the freest from diseases, though not fittest for labour; and therefore when they are taken from thence for hunting, or for labour, they should have a feed or two of corn; and if they are allowed it at other times, they will perform their business better. When grass is scarce, or the weather is bad, they should always have hay to go to, and a place for shelter, especially if they are kept out in the winter, when there is little occasion to use them.

The goodness of grass should always be principally considered. That grass is always best that is short, thick, and that grows on dry, fertile ground, that wants little or no dunging, and that has been used for pasture only a considerable time. Meadows that have been often mowed, are not so fit for horses as commons

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or parks, unless they are well manured, and then sowed with clover. Long, rank four grass is by no means a good pasture; for though the hay that is got from thence be pretty good, it is owing to the fermentation or sweating, as it is commonly called, which exalts the juices, and makes them more fit for use.

The place where a horse is to run, should always be at a distance from great towns, if possible, for where there is plenty of manure, and the grounds are much dunged, they are never so fit for use, as when nature alone plays her part without the assistance of art. For though a horse in such places may do pretty well in the spring, when he can pick and choose what he likes, yet afterwards, when he must eat what there is, or none, he generally declines, and grows pot-bellied. This observation upon grass is of more consequence than many are aware of.

I believe that almost every one has observed, that clay will retain water longer than any other kind of soil; and for this reason, ponds that will not keep water are often covered with clay at the bottom, to prevent the water from sinking into the earth. Hence it appears why clayish ground in the winter time, or in rainy seasons, must be more wet, slabby, and damp than others: therefore all such grounds are unfit for pasture, unless in dry seasons, and they generally do horses more harm than any other whatever. And it has been found by experience, that horses that have been taken in a-nights, which one would think might prevent any bad effects, have been thrown into various disorders.

There are no horses that feel the good effects of grass more than the broken-winded; for this generally keeps their bodies open, and by that means prevents a full belly from hindering the playing of the lungs; whereas hay passing off more slowly stuffs them up, and must needs hurt their wind in proportion, as it renders them more costive. And to say the truth, grass, in the spring, is an excellent remedy for many diseases; because it renders the blood and juices fluid, and opens those obstructions, and dissolves those concretions which had been

been contracted in the winter by hard, dry food, and want of exercise. Besides, it is a kind of natural purge, and carries off those impurities which have been dissolved by this diet, and made ready for excretion.

But if spring-grass is not found sufficient for these purposes, then recourse must be had to the salt marshes; for these being impregnated with salts, especially when they are overflowed by the high spring-tides that happen in the latter end of February or beginning of March, and likewise in October, at which times they are always highest, because the sun and moon then act jointly upon the water. These salts adhering to, and being swallowed by the grass, have much the same effect upon horses as sea-water has; for in both they operate by stool and urine; and therefore they will prove an excellent remedy in most tedious diseases. Besides, the water that such horses are obliged to drink is always brackish, so a horse that continues there long, may be said to be under a course of sea-water. If we were to judge by reason only, we might be apt to conclude, that keeping horses for any considerable time in salt marshes would be very injurious: but experience shows the contrary, for when they have been kept there all the year, they are generally in better liking, and have firmer flesh, than those that have seemingly a better pasture, nor is there any occasion for dry fodder, but when the ground is covered with snow.

When horses stand long in the house, as I observed before, no certain general rule can be laid down, as to the quantity of food; and therefore the constitution of the horse ought to be considered, for some horses have a much better appetite than others, and therefore may be more indulged that way. When they have a voracious appetite, and at the same time cannot digest all they eat, but become purisy, and begin to shew symptoms of any disease, they must be abridged in their allowance, and as was said before, their oats should be mixt with chopt wheat straw, that they may chew them the better, which causes a better digestion as the aliments pass through the stomach and intestines.

When

When horses stand long in the stable without exercise, they always require a less quantity of aliment, for they should always be fed in proportion to the labour that they undergo. And therefore horses that are kept much on the road, that are often rid a hunting, or that are out daily with a coach or cart, should always be well fed.

Some horses pull out the hay from the rack under their feet, and, as it were, pick and choose what they like best. This is look'd upon by some as a sign of a bad horse, but experience has shown the contrary, and that they are sometimes as good as any others. However the allowance of corn may be abridged, and then perhaps the hay may go down the better.

Some horses are never easy when they stand before an empty rack, especially those that are very young, but will always be restless, stamping, kicking or biting the manger. And if they are suffered to be constantly nibbling in this manner, they will at length turn crib-biters, which is a very bad quality. The best way to remedy this is by laying a little good clean straw before them, and this will keep them from worse employment, by finding them something to do, without any bad consequences.

EXERCISE is a principal means of keeping a horse in health; for even those that are but meanly skilled in the theory of medicine must know, that the motion and exercise of the body promotes perspiration, and that a free perspiration is necessary to health; because when the perspirable matter flies off through the skin in a due quantity, it is greater than all the rest of the secretions. Now as perspiration depends on the circulation of the blood, when this is either too quick or slow, that salutary evacuation is either increased or diminished; for as it passes off through the pores of the skin, the greater the afflux of the fluids is to this part, the greater plenty of this perspirable matter will be secreted; and the more languid the motion of the blood is, the less will be the supply of the particles to be carried off.

By motion and exercise the muscular fibres are contracted, whence the blood flows with a quicker motion
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and greater force through the vessels of the heart, by which means they will be more expanded, and this expansion will be followed by a greater contraction; wherefore, while the blood is thus increased in its motion, the whole mass will circulate more speedily through the vessels, and consequently exercise and labour, by quickening the motion of the blood, will tend to promote perspiration, and restore it when suppressed.

That this is the case, may be known from the heat which is excited by motion and exercise; for that always increases in proportion to the rapid motion of the blood through the vessels. This is evident from fevers, wherein the swift circulation of the blood is always discoverable by the pulse, and which are always attended with very intense heat. Besides, every one knows the severe cold of winter is hardly felt, while the body undergoes any laborious motion.

Besides, a quick circulation of the blood attenuates the humours, and renders them more fluid; whence they are freed from impure matter, a weak appetite is strengthened, the spirits are revived, and the whole body rendered more robust. For as the strength of the body depends on the influx of good blood into the muscles and fibres serving for motion, when it flows to the stomach which is the shop of digestion, it follows that appetite should by that means grow better.

Hence it appears that no remedy whatever can have so great a tendency to prevent and cure many diseases as exercise; particularly the grease, chest-foundering, stone, intermitting fevers, pensiveness, a broken-wind, a dropical habit of body, the scurvy, the yellows or jaundice, and gourdiness or swelled legs. On the contrary, nothing is more detrimental to the health than constant rest, because it generates too large a quantity of humours, attended with impurity, which by obstructing and stuffing the bowels, occasion various diseases; while motion consumes the redundant plenty of the humours, and cleanses the blood from impure excrementitious matter, and by preserving the fluidity of the blood, keeps all the vessels open, which would promote

promote many diseases, if they were obstructed or shut up.

To exercise may be referred the rubbing, currying, and dressing of horses; for these increase the heat, promote an afflux of blood to the external parts, and attenuating the blood promote its circulation, and consequently are great friends to perspiration. It is likewise very helpful to the stomach, and a great promoter of digestion.

When a horse is exercised, it should always be in the open air; for the bad stagnating air of a close place is sufficient of itself to breed various diseases. The offensive smell and heat which we always find when several horses are kept together in a close stable, is sufficient to convince any thinking person of the necessity of pure, serene, temperate air; and there is nothing more noxious and prejudicial to health than the steams that arise from animals, where there is no free egress and regress of the air. We have but too many examples of the truth of this among the human species, and what diseases are bred in crowded ships, hospitals, and prisons. Whereas good air preserves the contractive and expansive motion of the solids safe and sound; preserves the due strength and tone of the fibres, not by constringing or relaxing the pores of the small vessels, or dissolving the texture of the fluids, or rendering them clammy and viscid, but by preserving their mixture and temperature. I hope this hint will influence those who have horses under their care, to keep their stables clean, and to ventilate them with fresh air, to prevent the horses from being stifled by their own steams and nastiness.

All exercise must be kept within due bounds; for if a horse is rid beyond his strength, he will suffer more from it than if he had been at rest in the stable. Nor should a horse be put to violent exercise with a full belly; and therefore when he has just had his meat and water, his pace must be very slow at first, and then as his belly begins to empty, his speed may be increased without danger.

A horse

A horse that is high-fed, without any exercise, is very unfit to perform a journey; for before he has travelled many miles, he will lose his spirits, and be apt to tire, unless he is suffered to crawl along at his own slow rate. Hence the consequence of a due care in want of dressing and exercise becomes very evident. And though some are not willing to see this, yet none can be ignorant that a horse's legs will be swelled with standing in the stable and doing nothing.

When horses have been suffered to continue long without exercise, they are not to be put to hard labour all of a sudden, but by degrees: for though they may seem to be in good case, and to be full of flesh, yet it generally renders them loose and flabby. For the fibres of animals never retain a due or springy elasticity, while they continue inactive. I remember a dog that was tied up all day long in a yard, for several years, and was let loose at night, at which time he generally retired to his kennel immediately. I persuaded the master to take him into the fields, to see how he would behave; and according to expectation, in walking about half a mile, he was quite tired, and was used to stop every twenty yards, insomuch that we were not able to get him home again, but with the utmost difficulty.

There is no doubt to be made, but the fluids of the body are greatly vitiated, as well as the muscles which are the more immediate instruments of motion; and therefore it will be proper to take away blood to lessen their quantity, and in some measure to restore the due tone of the over-distended vessels: and then the state, colour, and consistence of the blood, which are usually very bad, show the consequences of horses being kept in such an idle, useless manner. Hence many horses, the young especially, are thrown into fevers and other distempers, without due preparation.

This preparation should always be proportionable to the time the horse has been suffered to remain without exercise; because the longer he has been inactive, the more damage must have been done to the horse's constitution. Therefore a horse must be worked very little

tle at first, and the increase of his labour should be very gradual, and used as it were by way of exercise, till you find by his agility and spirits he can perform a greater task with ease and pleasure.

However, though what I have is true in general, yet there are exceptions to this general rule; for some horses are of so hardy a constitution, that scarce any thing will hurt them. Errors in food and exercise that will effect some horses, will not extend to all. For there have been horses that have been kept all the winter in the house, and have never gone any further than the watering places, and yet when they have been taken out to work immediately, without any preparation, have never come to any damage. But these instances are few, and only among horses that have been brought up hardily: whereas fine, delicate bred horses must needs be great sufferers by such management. But the worst of it is, that the event of such a proceeding can never be known without a trial, and therefore it is very dangerous to run such a risk. I may observe farther, that when horses are brought out of dealers hands, they have generally been pampered and prepared in such a manner, as to make a fair shew; and therefore they should be supposed to be in the state above mentioned, and not to be put to hard labour of a sudden.

When such horses as these have been bled, the next thing is to lower their diet, but not much, for then they may suffer greatly by the contrary extreme, and what was designed for a remedy may prove a disease. Then they should be walked about in the open air, in fine warm weather, if possible, for two hours; for when they have been kept long in a hot stable, too sudden change may prove very prejudicial, especially in the time of rain, for then it is a hundred to one but they catch cold. Sometimes the season of the year will not allow room to expect good weather, and then if a horse is warm clothed, it should be lessened by degrees, and the stable should, by a slow progress, be rendered more cool. I mentioned before the pernicious custom of letting a horse breathe nothing but his own atmosphere,
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and keeping him in a stable filled with the steam and effluvia that fly off from his own body, or from other horses. One would think such persons that treat horses so, never enjoyed the benefit of fresh air themselves.

In a week or a fortnight's time he may be walked about two hours in a morning, and two in an afternoon, the farther from home the better, because the air will be more beneficial. You will readily perceive by the increase of his spirits, and the agility of his motions, when he will be fit for business, which sometimes does not happen till the expiration of a month. But before he is put to his employment, it will be proper to take away more blood, and to give him scalded bran two or three times a week, to keep him from growing costive; or if he dislikes it, he may have it raw, mixt with his oats.

When a horse is to go a journey, he should have his corn very early, that it may be in part digested before he sets out. And then if his constitution is good, and he has been watered in the stable, he will not want to drink at the first water he comes at. After he has eat his corn, he must stand till he is taken out without any hay. Another sign of his mending his constitution, is the abatement of his sweating, and when he does sweat, it should run off like water. For when the sweating turns to a foam, or makes the horse look as if he was lathered with soap, it is always a sign of a thick fizy blood.

In general, when a horse has a smooth glossy coat, when his legs feel hard, cool, and are free from swelling, when he stands up in the stable, when he has a good appetite to his meat, and if when, after he lies down, he rises with a good spring, and shakes himself, you may conclude he is in good health, and fit for any business he may be put to.

Some horses have their blood so vitiated, that it requires a great deal of care and trouble to set them right, insomuch that they will fall lame under very moderate exercise, without any strain or violence; and by reason of the pain which they feel in their joints and other parts, they are very apt to fall into a sweat. These

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horses,

horses, when they grow a little cool by time and moderate diet, should have a purging medicine to carry off the offending humours, and if their appetite is bad, and they feed but poorly, the physic ought to be very mild and gentle. He should likewise have such things as strengthen the solids, invigorate the blood, and increase the elasticity of the muscles. In this case the cordial ball should be given him, which will be hereafter mentioned.

It sometimes happens that horses that have been fed plentifully, and yet are enfeebled for want of exercise, cannot be recovered without being turned out to grass, at least not so soon nor so perfectly. The open field is the place designed by providence for the subsistence and residence of a horse. The whole apparatus of stables, racks, mangers, hay, litter, &c. are provided for our own use, not theirs; that is, we intend thereby to fit the horses for business, and to have them ready at hand. Therefore it is no wonder, that a horse should sooner recover his health and strength under the guidance of nature, than by all the rules laid down by the most rational and experienced farriers, not excepting those who have been educated to heal the disorders of human bodies, and yet have thought it no dishonour to change the name of a *physician* into that of a *horse-doctor*. Though one in particular has made himself very merry with farriers, quacks, and nostrum-mongers, yet he cannot but know, notwithstanding all his pretended acquaintance with the mechanical operation of medicines, that the virtues of them all were first discovered by experience. How could we come to know but by experience that a grain of opium is a sufficient dose for a man? And did not the same experience teach us, that a horse might take forty times as much, without damage?

I affirm then, that when a horse is full of humours, and unfit for business, there is nothing so proper as the open air, the liberty of running about, and good wholesome grass to cleanse his body, and to recover his strength. However, this ought to be done in good weather, for there is nothing so bad as to turn a horse
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out of a hot stable into the fields in bleak weather ; for a horse must have a good constitution indeed, that can stand such a shock. Some horses, however, are turned out in all weathers, without any damage, but then they have been long used to it. This is no example for delicate horses who have been tenderly managed, and who have stood long clothed in a warm stable. Such as these should be first prepared, by leaving off the clothing by degrees, by lowering their diet, and accustoming them to the open air by little and little every day. But if this cannot be complied with, they should at least have two or three purges to reduce their flesh, keeping them in the stable for a few days, that they may recover their spirits. I have already observed, that the salt marshes are the best for a distempered horse, and there are few miscarry in those pastures, unless such as are too far gone. Some horses are turned out for conveniency, and meerly to save the charge of keeping them in the stable ; but this is a circumstance that is foreign to my purpose.

There are some horses that have been very well taken care of, with regard to diet, dressing and exercise, and yet fall off their stomachs without any visible reason. When this is the case, we may conclude there is some latent disorder : and if the particular nature of it is not discoverable by the symptoms, the best way will be to turn the horse out to grass, for the opening and laxative nature of this will sooner effect a cure than any medicine can do, that is applied at random. Likewise horses that have been bred in places where they have been much used to grass, are apt to pine for want of it : which may be known by their being parched and dry in the grass-season, mangling their hay, and when they see any green fields, by looking wishfully after them, continually craving to satisfy their appetites therein. These should be indulged for a month at least, and may be made use of at the same time, if they are turned into pastures near at hand.

Horses, who through hard labour and bad usage grow stiff in their limbs, with swelled legs and staring coats, should be turned out to grass as soon as possible,

which will sooner bring them to themselves than any physical method, though never so judiciously managed. Lean horses that have done growing, may reasonably be suspected not to be quite sound, as well as those that do not shed their coats kindly, or in their proper season; and it will be necessary to send them to the salt marshes, or at least to some meadow on the side of a river. The same rule may be observed for those who are just recovered from a fit of sickness, for nothing recovers their appetite and flesh so soon as grass. When horses have had a surfeit, which has been improperly treated, so as to occasion them to peel, which may be discovered at the roots of the ears and other places about the head, nothing will bring them to themselves so well as spring-grass, which must sometimes be repeated yearly; and yet when the case is very bad, this will unhappily fail.

In general, grass is proper for horses that have a lameness from disorders in the muscles, and hurts of the tendons or sinews, when they happen to be shrunk; for those that have been fired for lameness upon the joint or sinews; for horses that have hard, brittle hoofs; for those whose feet are cut to pieces for the cure of the quitters; for those who have their feet worn down by travelling, or bad shoeing; for those who have been cured of the farcy, till the scabs and scurf fall off, and their limbs grow limber; for horses that have been long costive; and for colts and young horses.

But when the cause of a horse's lameness lies in the joints; or when it shifts from one shoulder or limb to the other, which is a sign of the rheumatism, grass is not so proper, unless when they are turned out, in this last case, when the weather is warm, into salt marshes, or a dry common, or into a field where there is no pond, but only a shallow rivulet running through, that they may not go too deep into the water. Likewise these should be bled and purged before they are sent to grass, and take medicines to thin the blood.

SOILING of a horse, is the giving him herbage, that is young, tender and full of sap, such as green barley, tares, clover, or what the season produces, in the house.

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Those that are most commonly spoiled are stoned horses, because it is hard to find any inclosure that has fences strong enough for them in the open air. And there is no great occasion for this, because all the disorders for which a stoned horse is generally spoiled, may be remedied by giving him straw instead of hay. But if he is lame and must be turned out on that account, it must be in a place with an exceeding good high fence, otherwise he will not be confined. Green barley, before the ear is formed, is the best for spoiling horses, it being then moist and full of sap; for when it becomes dry, it is hard of digestion. Tares and clover must also be young, and cut once a day, or oftner, for when they are old and dry, they render the horse costive, which is attended with heaviness of the eyes, loss of appetite, reeling, and other bad symptoms. If this has been unwarily given, emollient glysters must be injected, which will bring away the hardened excrements. But it must be remembered that I am speaking of horses which stand in the stable, for when a horse has sufficient exercise, by working or otherwise, these bad effects will not be produced. Sometimes this kind of herbage has brought on all the symptoms of a surfeit, with breakings out in several parts of the body, which evidently shews the difference between new hay, and that which, by undergoing a fermentation, has had its juices exalted. This also shews the reason why the herbage should always be cut fresh as well as young; for as the design of spoiling a horse is to cool or purge him, this end can never be answered by giving him any thing that will tie him up, and consequently render him more hot. Not that all horses will purge alike by the same management, which is owing to their idiosyncrasy or particular constitution. Besides, that which purges one horse by stool, may work upon another by urine, and yet have the same salutary effect.

When a horse loses his flesh, and grows weak by spoiling, his diet must be changed for one more solid, otherwise he will be some time before he is brought back to his former strength. When a horse bears this treatment pretty well, and when his diet is changed,

he should have some very good bran mixt with a small seed of oats, and his hay should be sprinkled with water when put in the rack, and his allowance enlarged by degrees, with exercise. This method will keep his body open, which is of singular use after soiling. He must likewise be littered only at night for the first fortnight, and then he may be dressed and curried as usual. All these precautions are contained in this short rule, *That all sudden changes, from one extreme to another, should be avoided as much as possible.* Some horses are so hardy as to endure any thing; but as this can only be known by the event, no man in his senses will run the hazard of the trial.

The management of horses, when they are taken up from grass, must be different according to the time they were there, and according to the season of the year. If a horse has only run a few weeks in the spring, there is little care to be taken afterwards; but if he has been out all the summer, or for a whole year together, a particular treatment is required, especially in the last case. For then he must have bran and chopt straw mixt with his corn, and now and then a feed of scalded bran, for a fortnight, to keep his body cool and open, for otherwise he will be costive, which is always attended with heat and other disorders. After this his corn may be given him without mixture, a little at a time, and often, with plenty of water, not forgetting exercise in the open air. I believe there are very few so ignorant as to be told, that when the rains come on in the latter end of summer, fine-skin'd, delicate horses should be taken into the house; much less that they should not be suffered to remain out all the winter. Horses that have been sent to graze in salt marshes, may generally be taken up and put upon business directly, at any time of the year, as well as those from dry commons. The longer a horse has been out in a common pasture, the more his airing and exercise should be increased when he is taken up, and his diet should be changed in the manner abovementioned, in stables where the air may be let in at pleasure; for a close, damp stable, with stagnating air, will produce various distempers.

distempers. Some give their horses liver of antimony to keep their bodies open, but this is needless, if they are treated as above directed. However, if the horse is taken up in the beginning of winter with a cough, he may be allowed an ounce of *crocus metallorum*, now called crocus of antimony, in a day, and no more, which will promote a moisture on the skin, which is all that is required. Some think it best to begin with sulphur and crude antimony, in fine powder; or crude antimony with gum Guaiac, and afterwards the *crocus metallorum*. When horses have been taken up from pastures, wherein the grass has been forced by dunging the ground, as it can never yield very good nourishment, the antimonials will be proper to sweeten the blood. Some, when the horses are full of flesh, purge and bleed, and even rowel them before they turn them out to grass, but I think such management altogether needless, especially in the spring, for then the grass itself is the best purge that can be given. When horses taken up from grass have their legs swelled by standing in the stable, it will be proper to purge them, but not till after their impoverished blood has been mended with good diet: and then the purge should be mixt with cordial and diuretic ingredients, otherwise they will do more harm than good. Sometimes it will be proper to give them diuretics mixt with strengtheners, to brace up the solids, and to evacuate the abounding serum. For poor and watery blood, which is always generated by bad pastures, will render a horse weak and foggy, and unfit for service, till his strength is restored by proper medicines and diet. Rowelling will indeed bring off the waters, for it is generally attended with a flux of humours upon the part; but then they often prevent the digestion of the issue, and endanger a mortification. Therefore it will be the safest method to use purges and diuretics, with steel powders and other strengthening ingredients, together with nourishing diet and exercise.

When horses stand much in the stable without sufficient exercise, if their eyes look heavy and dull, or red and inflamed, or when their lips and inside of their

mouth are hot, yellow, and inflamed, with mangling of their hay ; it will then be proper to bleed, and lessen their allowance till they have more exercise. Bleeding is also proper for young horses, when they are shedding their teeth, to prevent fevers. The best time for bleeding is the cool of the morning. But I shall speak of this particularly, after the treatment of running horses.

Of RUNNING HORSES, and their treatment.

THERE is no general rule for the shape of running horses, some preferring those of a fine slender make, and others of a strong full body ; therefore a medium between these extremes seems to me to be best. The size should be fifteen hands or upwards ; but then they must be strong in proportion, and at the same time very brisk and active, not clumsy. The colour depends much upon fancy, but a dark bay, with black eyes, is preferred by some. Stars and snips are not essential to the goodness of a horse, but most prefer a horse with such marks, provided he is in other respects equally good. The head should be small, the forehead flat, the ears large, and not placed at too great a distance from each other ; and he should play with them backwards and forwards alternately, it being a sign of health. His eyes should be full and sprightly, his nostrils wide and thin ; his jaw-bones, near the throple or windpipe, should be at good distance asunder, that they may not by squeezing his windpipe affect his breath, by the pulling in of his nose. His throple should be loose and disengaged.

The neck should be well-shaped, of a moderate length, and then he will fetch his breath with greater ease ; which he cannot do if it be very long, because it renders his windpipe circular, and then the wind cannot pass backward and forward so freely. The lungs should be sound and large ; but we are not able to judge of their size, but by way of analogy. Therefore if the horse has a capacious chest, with a large and loose

loose windpipe, we conclude the lungs have a formation agreeable to our wishes. For those who are but moderately versed in anatomy well know, that any animal with a narrow chest can never have room for a free expansion of the lungs, and without this there must always be a kind of oppression in breathing. And therefore in a running horse this is a circumstance that ought never to be overlooked. Some judge of the capacity of the chest, by his having the make of a greyhound about his breast; and yet some round-barrelled horses have been known to perform very well. For which reason we should not merely consider the depth of a horse in the girting place, but the true measure which is over the highest part of the horse where the ribs join; and then the length of the girt will help to determine the capacity of the chest. If he has this quality, and is a strong, nimble, well-moving horse, there is no doubt, but with good keeping and exercise, he will be able to run through his course.

A running horse should never leave his legs behind him, as the jockeys term it, but should bring his haunches under him when he gallops; besides his fore feet should not be lifted far off the ground, and then he will run with great ease to himself, and be most likely to perform what is expected from him. Some think this is not so well when the ground is soft; but we readily find, that he lifts up his feet in proportion to that, if he has but sufficient strength.

The shoulders upon the chine should be moderately thin and narrow; I say, moderately; for if they should be too thin, he would not be able to carry his rider. The shoulder-blades should rise in due proportion to the top of the withers, meeting equally, and not playing up and down under the skin, for then they are too loose by not being sufficiently connected to the ribs, and the horse is rendered weak. Therefore when the shoulder-blades meet exactly at the top, and are kept in their proper situation, by the muscles which are placed between them and the ribs, it is no matter how thin they are at that place, provided the counter is not too

full and large, for then he will throw out his fore legs, and keep them too much asunder.

The back of a running horse should be rather long than short, and then if he is broad filleted, he will be able to spring forward the better. Broad filleted horses are those that are full of flesh on their fillets or loins. He should neither be round-barrelled nor very flat-rib'd, but between both. His haunches should be large and wide, as being a sign of strength. The croup, I mean the part between the dock and the reins, should be pretty strait; that is, it should not have too great a fall. The thighs should be full and strong, but not too fleshy. The pasterns should be proportionably long, and he should stand upright upon them; for the horse whose pastern-bones are long will make the longer strokes when he gallops. The fore hoofs should be pretty large black, smooth, and flattish.

The choice of a good stallion and mare, for the breeding of running horses, is universally acknowledged to be necessary; but there are some rules to be observed in the affair of generation, which are not so commonly known, and therefore I shall take notice of them in this place. And first it may be observed, that mares who are over fat do not retain so well as those that are moderately fleshy. A stallion should be six years old at least, and he will perform very well till he is fifteen, nay, sometimes till twenty, as has been found by experience. The mares should never be under three, otherwise they will breed small puny colts, which never make good horses; and they are best when they have had two or three colts at due distances of time. A mare should never be brought to the stallion while she is bringing up her foal, for this will ruin the mare, she not having sufficient strength to breed one, while she is giving suck to the other, without hurting her constitution. Once in two years is enough for any mare to take the stallion. The best month is June, that they may foal in May, when there is plenty of grass, for by that means the mare will be better enabled to yield plenty of milk. The stallion should be never suffered to serve above two mares in a day, for
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when they cover eight, ten, or a dozen, as is the custom on market-days, they can never be supposed to generate strong healthy colts.

The foal should be suffered to run with its mother a whole year, that is, from the time of its being foaled, till there is good grass the following spring. In the winter they should be housed, and turned out to grass in the summer, till they are past three years old, and then they will be stronger and better shaped. The pasture should be dry and airy, with room sufficient to rove about in; together with a watering-place. The chief secret in raising fine horses in cold countries, consists in keeping them warm in winter, feeding them with dry meat, and turning them out in summer to dry pastures. For if you take two colts, begot by the same stallion, upon two mares equally beautiful, and keep one of them warm in the winter time, feeding him with short, sweet hay, and a moderate quantity of corn, till he is past three years old, he will be almost as well shap'd as his sire; and if the other is suffered to run winter and summer in the fields, till he is the same age, he shall have his head big and thick, his shoulders loaded with flesh, and shall in shape and size become perfectly like a cart-horse. Hence the necessity appears of keeping the colt in the house in winter, with good dry food, if you intend to have beautiful horses.

While they are in the house, you should endeavour to make them as gentle and familiar as possible, and then there will be no great difficulty of backing them; and it will be easier to break them still, if you give them a little corn now and then in the fields, and accustom them to come to you of their own accord upon such occasions. At the age abovementioned, they should be first set upon their bit in as gentle a manner as possible, and while this is doing, they should have a very easy load tied upon their backs, and that will prepare them to carry the rider. By such means as these, with care and pains, the most stubborn colts may be managed and broke. They may be inur'd to the bit soon after they are weaned, for then they are more easily mastered,

nor

nor can they do themselves any harm, while they are in the colt-halter. But if nothing be done till they are four or five years old, their strength and weight will render the task much more difficult. Besides, some large, strong, ungovernable horses have broke their necks by running back, when put into the colt-halter. When they are broke to the bit, they should be kept to exercise pretty often, and then they will take every motion you would have them very readily. Some may object against putting a weight on the back of a foal, lest it should make him sway-backed: this, indeed, might be the consequence, if the burden was very heavy; but from a light weight there can be no manner of danger. If something was made in the shape of a boy, it would be still better, for then they would be accustomed to see something over their heads which would prevent their playing any tricks when they are first mounted by a rider.

When horses are designed for running, they should not be put to that sport at four, because the tendons or sinews of their legs have not gained such a due consistence and firmness, as to prevent their being easily over-stretched, whence proceed claps of the sinews and windgalls. Therefore it is much safer not to make use of them in that way till they are turned of five. The stalls the colts placed in should be large in proportion to their size, and paved with a very easy descent, for when their fore legs stand too high, their hind legs will be apt to swell; which will turn to the grease unless you have a very careful groom indeed. The best food for such a horse as this may be six parts of good oats, and one part of split beans, with a handful of wheat put into each feed, and then he will be fit for a race at any time, without any further preparation. It is a very pernicious custom to be frequently purging horses, for it weakens their constitutions, depraves the blood and humours, and hinders digestion. Every purge abrades in some degree the mucus of the intestines, procures an extraordinary secretion of the bile or gall, and of the pancreatic juice. Therefore nature must needs languish under this loss, when the drains of these salutary fluids are too frequent; for unless they are exiting in a sufficient quantity to mix
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with the aliments, the digestive powers must needs be weakened, since they are absolutely necessary for the elaboration of the chyle.

What I have said relates to frequent purging ; but as for giving physic on particular occasions, there can be no objection against it. Thus when, a horse has been at dry meat for a month, without due exercise, it may be proper to give him the following purge.

Take of Barbadoes aloes an ounce and a half ; of calomel a dram ; ginger and cloves of each two drams ; of syrup of ginger enough to make them into two balls, and roll them in liquorice powder.

The balls are for one dose, and must be given early in the morning, and washed down with a quart of warm ale mixt with treacle. When he has swallowed this dose, he should be tied up to the rack for an hour, putting straw in the manger, to prevent the slabber that may fall from his mouth from falling into it. After this he should be kept in the house all day, and he may be fed as usual, only less in quantity, and his water should be a little warmed with bran in it: for cold water will sometimes occasion gripings.

Some authors cry out very much against resinous purges, and particularly scammony, affirming they adhere to the coats of the intestines, and often cause fatal disorders. This, indeed, may be true of scammony, for aught I know ; but then it is owing to the deleterious quality of the medicine, and not to its being resinous : for it is well known that gum guaiac, which is a resin, and common resin will produce no such effect ; not to mention resinous solutions in spirit of wine, which are now frequently given inwardly without the least bad effect. But whatever cause such like effects may be owing to, they had best be avoided without giving them at all, for there is safe physic of various kinds, sufficient for every intention for which purges are given. The supposition, that violent drastic purges of this kind are most beneficial, if they could be given safely, is a great mistake ; for whatever takes off the stimulus, and prevents their entering the blood, will render them proportionably useless. I know some mechanical gentlemen

men pretend, that purges act only by stimulating the intestines, and urging them to discharge the contents of their glands, but this is a great mistake ; and to convince these gentlemen, if they are to be convinced, let one take a dose of rhubarb, and then observe the colour of his water, which will be much stronger than usual ; or if this is not sufficient, let him swallow two or three grains of elaterium, and he will find a strange irritation of his blood-vessels, even to his very fingers ends. Let such explain how these effects can be produced, unless the purge enters into the blood. These mathematical physicians would be thought able to apply the abstruse problems of geometry to the animal œconomy, and are very fond of the mechanical practice of physick, when at the same time they do not understand the powers of the lever, the screw and the pulley, so much as a common carpenter. Had these doctors known that every draffick purge has a deleterious or poisonous quality, perhaps they would have been more modest, and have attributed the miscarriages of their patients or horses to its proper cause. Therefore the only directions that ought to be given about such violent cathartics, is to advise the leaving them off entirely.

Some advise, after the horse has taken one purge, to give him two more, with the interval of a week between each ; but I am of opinion, that if the horse is kept to his daily exercise in the open air, there can no superfluous humours remain that require purging : it is inactivity, the want of motion and full feeding that accumulate humours in the body, and therefore the best way is to prevent the cause, and then the effect will certainly follow. It is true, that some horses will have too much flesh, though exercised ever so regularly ; but this can seldom be the case ; yet if it is, they should be rid till they are in a sweat, and when brought into the stable, it should be promoted by throwing a thick blanket over them from head to tail, and letting them stand so a considerable time. If the sweat runs off a horse like water, it is a good sign, but if it is frothy, it is looked upon as a bad omen, and that he is not fit to run. Some again think, when a horse has run a heat

without

without sweating, he has not been pinched or pinned down, but this is a mistake, for it may happen from his being hard run, or from being run above his wind.

Before a horse is taken to his exercise, his heels should be rubbed with dubbing, which may be had at any currier's, and should be washed off every time he returns, not with cold, but with warm rain or river water; and his heels and legs, all round the fetlock joints, must be rubbed dry and clean with good straw. After which a little more may be put on, and this will preserve him from the scratches which is the fore-runner of the grease. Likewise the feet should be stuffed with cow-dung, and the outside of the hoof greased with hog's lard, otherwise they will grow hard and brittle with standing long in the stable.

When a horse's tail shakes and trembles after a heat, it shews he is hard pinched, and when he often shifts and changes his feet, it is a sign his legs are tired; but if he looks lively after a heat, pricking up and playing his ears, it denotes he will run again as well, or better, tho' his tail should tremble. If a horse attempts to piss, and cannot, after a heat, it promises no good, but if he can perform it without straining and with ease, the contrary. After each heat the horse may have white-wine and water to wash his mouth with; yet some give them a pint of mull'd sack, but this is too strong, unless he has been used to it before; and then it is a bad custom, for that must be most agreeable to a horse, which approaches nearest his natural way of living. Then the horse should be walked about with his clothes on, till he is quite dry, otherwise he will be apt to be faint and sick, and refuse his feed. But if this happen in the evening, when the weather is cold, it will be dangerous to keep him out too long; for if the pores which are now open, be closed too soon by external cold, the matter of perspiration will be shut in, and a plethora will ensue, which is the parent of many diseases.

When the horse is in the stable and quite cool, you may give him the size of a hen's egg of the following
Cordial Ball, dissolved in a pint of small white wine

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wine made luke-warm, and then tie him up for an hour before he has any thing else.

Take of liquorice powder four ounces ; aniseeds and cummin seeds, of each two ounces ; of sugarcandy dissolved in fennel-water, four ounces ; of crude antimony in fine powder, two ounces ; of colts-foot leaves two ounces ; of turmeric in fine powder, an ounce and a half ; of oil of aniseed half an ounce ; of saffron two drachms ; of wheat flour enough to bring it to the consistence of a stiff paste : these should be beaten well together in a marble mortar, and then put into a bladder close tied up for use.

The common dose of this is an ounce early in the morning before exercise or watering. Some prescribe two ounces of sulphur without antimony, but as antimony contains a great quantity of sulphur, and as this mineral and its preparations have been found, by long experience, to be very friendly to the nature of horses, I am of opinion, that this ball, so compounded, is better than any other hitherto made publick ; for I have found by experience, it will prevent or cure most diseases, except fevers. *Markham's* cordial balls, once in very high esteem, are thus made :

Take of aniseeds, cummin-seeds, fenugreek-seeds, carthamus-seeds, elecampane and coltsfoot, all in very fine powder, of each two ounces ; of flour of brimstone two ounces ; of Spanish liquorice-juice, dissolved in half a pint of white-wine over the fire, and of oil of aniseeds an ounce ; salad oil, honey, and treacle, of each half a pint : beat these together with wheat flour, enough to make them into a stiff paste, and keep it close covered in a gallypot. The dose is a ball of the bigness of a hen's egg.

Some will not allow the horse any corn the night after he has run, for fear of a surfeit ; but he may be safely allowed a pint, and let his water be almost luke-warm. Some again will let the horse drink cold water mixt with oatmeal, upon a supposition that this takes off the rawness of the water ; but this is very unsafe, for
when

when the blood and humours have been put in a violent agitation, which distends even the least vessels, the chillness of the water suddenly constringing the vessels, may prevent the progressive motion of the fluids, and cause a stagnation, which will be attended with an inflammation of dangerous consequence. This is not built on theory but experience; it being well known, that if a dog or any other animal drinks cold water while he is very hot, an inflammation of the lungs is produced, which terminates in death. And though a horse is not actually hot at the time when the water is given, yet he cannot be so much come to himself as to make all the fluids return into the usual channel of circulation, and consequently if the minute vessels continue to be distended as above, it will be no wonder that obstructions of the viscera should ensue, if not an inflammation just mentioned.

Formerly some time before a horse was to run, they used to diet him with bread made of equal parts of beans and wheat, after it was three days old, mixt with his oats: and the nearer the time of running, the greater the allowance: so little were they acquainted with the nature or power of digestion.

However it will be necessary to know when the horse is in health; for if he should be otherwise, it would be no wonder if he should deceive your expectation. Therefore a horse that is sound and well, has his dung of a moderate consistence, neither so thin as to run, nor so thick as come away in small round pellets, of a blackish colour, for in this last case you may be sure he has some internal disorders attended with heat. If it is greasy without purging, it denotes foulness. If red and hard, it is a sign he has been too hard rid, and is the forerunner of costiveness. When it is pale and loose, the horse will be proportionably weak, if not from an error in his diet.

The urine should be of a pale yellow, not very thin, and of a strong smell peculiar to horses. When it is fine, clear, and high-coloured, it is a sign of an inflammation or a surfeit. If it is red like blood, he has been over-ridden. If green, he is inclinable to a consumption:

114 *Of BLEEDING, and when necessary.*

sumption : if with streaks of blood, there is an ulcer of the kidneys. When it is black, thick and cloudy, it portends death.

If a horse sweats when he stands still in the stable, or walks a foot's pace, it is a sign of weakness. If the sweat is frothy, like soap suds, it denotes a clammy, fizy blood, and disorders arising therefrom. But if the sweat after exercise appears as if water had been thrown upon him, it is a sign that his blood is in due temperament, and that he is in health and strong ; especially if his coat is smooth and glossy. When he is actually falling into an acute disease, it may be known by the several symptoms of each, which will be mentioned hereafter.

Of BLEEDING, and when necessary.

IT is the common custom, when horses are blooded, to let the blood fall on the ground, by which means it is impossible to judge with any exactness how much is taken away. For whether it is made use of for the prevention or cure of diseases, it is always necessary to know the quantity that a horse ought to lose, because he may bleed two or three quarts, and sometimes a pint and a half may be sufficient.

Bleeding is sometimes necessary for the prevention of diseases, for when they are well fed, without sufficient exercise, they must generate too great a quantity of fluids, and then an evacuation of this kind will be proper : because a redundance of the blood and humours, which is called a *plethora*, by its resistance weakens the tone and contraction of the heart and arteries, and causes a bad habit of body. Want of exercise must needs diminish all the secretions, and consequently many impurities will remain in the blood, which should have been carried off by their proper emunctories, especially by insensible perspiration through the skin. Whence it comes to pass, that if you take blood from such a horse, letting it run into a vessel, there will appear a thick fizy coat on the top, commonly called a buff-coat. When this is the case, bleeding will encrease the contraction
of

of the heart and vessels, and restore the suppressed secretions, whereby the impurities of the blood may be carried off. But it must be assisted with motion and exercise, with rubbing and dressing, and then the progressive motion of the blood will be restored, and rendered fit for circulation.

When a horse, through negligence or ignorance, is suffered to continue in this condition till he is attacked by some acute disease, particularly inflammations, it will be next to impossible to restore him to health, without lessening the quantity of blood by repeated venæ section. And if at the same time the strait gut is filled with small, hard, round bits of dung, which physicians call scyballs, it will be necessary to empty it with a small hand before any thing is given internally. Bleeding is generally necessary in acute and continual fevers; as also when there is any epidemical fever rages among horses, by way of prevention, but how far it will be necessary after the attack of such a distemper, experience only can determine.

Bleeding is necessary in all swellings that have a tendency to imposthume; but then it must be before the gathering of the matter, which may be known by its fluctuation when pressed by the fingers: for then the best and easiest way will be to dislodge the purulent matter, by opening the abscess when it comes to a head. Bleeding is almost always proper in diseases of the head, such as the vertigo or staggers, inflammation of the eyes, and pains of the head: as also in pains of the side, colds, falls, bruises, strains by hard riding, hurts and wounds of the eyes, and in all cases where a stagnation of the blood is apprehended; particularly in all inflammations of the internal parts, as the liver, kidney, lungs, intestines or bladder, which never can be produced without a stagnation of blood in the part affected. Some prescribe bleeding when the horse is broken-winded, that is, when he is in the fit of a *convulsive asthma*; but this may be doubted, because the lungs are not oppressed by a load of blood, as in other asthmas. However there is no danger in the experiment, and if it does not yield relief, it can do no hurt. In disorders of the legs or beginning
of

116 *Of LAXATIVES, PURGATIVES, &c.*

of the grease, bleeding may be used by way of revulsion, but then it must be joined with gentle physick and proper alteratives, otherwise we shall labour in vain. Bleeding when young horses are shedding their teeth, takes away the feverish heat.

The spring is the properest time to bleed in, that is when the warmth of the air begins to expand the blood, and cause a turgency of the vessels; and then it is best in the cool of the morning, and the horse should be kept cool all day. When a horse is full of blood and humours, you need not wait for any season, provided the air be clear and serene. As to the age of a horse, it is not so essential with regard to bleeding as some imagine, if the nature of the disease requires this operation. However, bleeding should never be repeated so often as to render it habitual, for then the omission of it will be dangerous.

When the quantity of the blood is small, attended with weakness, bleeding is dangerous; as also in convulsive fits of all kinds, when the extremities are cold; and in the fit of an intermitting fever. But when there are cramps and contractions of the hind parts, which force the blood with violence to the head, then bleeding is convenient. Horses need not always be bled in the neck vein; for when there is any difficulty there, they may be bled in the plate vein, or any other large vein, provided the blood runs freely, and in a large stream.

Of LAXATIVES, PURGATIVES, and GLYSTERS.

MEDICINES that promote and accelerate the passage of the excrements through the intestinal canal are of two sorts, LAXATIVES and PURGATIVES. The first operate very gently, without causing any great commotion, or weakening the peristaltic motion of the stomach and intestines. They not only carry off impurities from the stomach and guts, but when they are given in large doses, bring off a large quantity of serum from the glands of the intestines. They are free from an acrid, volatile, caustic salt, which drastic purgatives
abound

abound with, and which is very offensive to the nerves; but are of an innocent nature, and act by means of a very fine stimulating salt. Those that are principally used are neutral salts, cream of tartar, Epsom salt, Glauber's salt, aloes and rhubarb.

Purgatives have a more violent operation, and when given in large doses, not only attack the nervous membranes of the stomach and intestines, but the membranes of the whole body, like poison, producing spastic contractions violent gripes, frequent stools, inflammations of the stomach and intestines, coldness of the extremities and convulsions. Some foolishly imagine that these sorts of purges act only by stimulating the stomach and guts, but I shewed the absurdity of this before; to which may be added, that if a nurse takes a purge, it will operate upon the child she suckles; that if an ointment be made with coloquintida, and applied to the belly, it will not only purge a child but an adult. The resin of Jalap often causes terrible symptoms, not because it is a resin, for many resins may be taken safely, but because it is of a poisonous nature; for if it is applied externally to the skin for some time, it will burn it like a caustic. Likewise the tincture of jalap and scammony swallowed alone, will burn the fauces and gullet, and produce burning postules.

Hence the danger appears of giving acrid, drastic purges, insomuch that a prudent farrier will not give them at all, or with the utmost circumspection, especially since some of the writers on this art have confessed, they have had horses that died under their hands, by giving them these deleterious drugs. Nothing sooner dejects the strength, changes the pulse, hurts and debilitates the stomach and guts, than these kinds of cathartics. Sometimes they induce a terrible dysentery, which no means or medicines have power to stop. However in some cases we may venture to make use of them, as in the dropsy, for then the intestinal fibres have a laxity and a torpor, which stand in need of a strong stimulus, to force them to the performance of the salutary excretions. Likewise the palsy and sleepy
diseases

diseases stand in need of strong medicines to excite the languid motion, and to procure a revulsion from the head.

After what has been said, it will be no hard matter to determine when it will be necessary to purge a horse, nor what kind of purges are most proper. However I shall only lay down some general rules, for fear of a mistake. It is very evident that horses which are full of flesh and humours from full feeding and want of exercise, will stand in need of purging after bleeding. This is best done in the spring, but when there is great occasion, any other time of the year will do as well; but the more temperate the weather the better. In which case it will be proper to give them some seeds of scalded bran the day before. It is generally twenty four hours before it operates, and it should be worked off with warm water mixt with a little oatmeal. The dose of a laxative is generally about twenty times as much for a horse as for a man; but as for strong purges, I would not advise the giving them at all, unless in a case or two, which will hereafter come under consideration.

Purges, I mean laxatives, all along may be likewise proper to prepare horses for hunting, running, or any laborious exercise; as also for the worms, in common loosenesses, in swelled limbs, in the yellows or jaundice; in diseases of the eyes and head without a fever; lameness that proceeds from bad humours; for those that have humours flying about them, which break out in biles or imposthumes. When horses have lamenesses which often remove from one limb to another, purges should be often repeated, with medicines that thin the blood. Lastly, in want of appetite, whether from bad provender, too often a repetition of scalded bran, full feeding, &c. purging is very proper.

When a horse is fat and full of flesh, from high feeding and want of exercise, besides bleeding a week before the purge, his diet should be lowered during that time, especially when he has been pampered for sale. Likewise a few seeds of scalded bran, as mentioned above, will open the horse's body and unload the
intestines,

intestines, which will render the operation of the purge much more certain and easy. However it is observable that all horses are not purged alike with the same quantity of physic, nor the same horse at different times of the year. Half an ounce of fine aloes has sometimes purged a horse, when it was only designed to open his body and no more. Therefore as we can never be sure what will be the consequence, it will be the safest way to give a horse a small dose at first, especially when he is designed to be purged more than once.

An ounce of good succotrine aloes and a quarter of an ounce of rhubarb, corrected with a dram of ginger, and made into a ball with solutive syrup of roses, is a proper purge for the finest and most delicate horses. Some add aromatic oils, and particularly thirty drops of the chemical oil of aniseed, but I think very improperly; for this will sometimes prevent the physic from working at all. Let any man try the experiment upon himself, with a moderate dose of jalap, and three drops of the oil of cloves, and then if he is purged according to expectation, he will find there is no truth in my observation. Some instead of rhubarb order the same quantity of jalap, which indeed is cheaper, but not so elegant and safe, and will want more correction. In this case it will not be improper to add the oil of aniseed.

The best time to give a purge is early in the morning in the summer, and about eight in the winter; and then the height of the operation will be about the middle of the next day. All the world knows it should be given fasting; and about three or four hours after it, he may have a feed of scalded bran; when he has eaten that, he may have sweet hay by a little and a little at a time, as his stomach happens to serve. He may likewise have more scalded bran once or twice the same day; but if he refuses it, as being warm, he may have it raw, provided he drinks a sufficient quantity of milk-warm water along with it. The water may have a handful of oat-meal mixt with it, or the same quantity of bran squeezed into it. But if he refuses it because it is white, he may have pure water alone.

The

The next morning betimes he may have another feed of scalded bran, if he will eat it; for if he happens to be sick, which is sometimes the case, he will refuse it. He may be allowed to drink as much water as he will, with the chill taken off, because it will make the physick work the more kindly. Then take him out of the stable, and ride him very gently, walking only at first, and then bringing him to trot; but be sure never make him sweat. This may be repeated three times, unless the physick work pretty briskly, and then twice is sufficient.

Some clothe their horse more than usual during the time of purging, but that renders him more liable to take cold after it is over; and therefore a single cloth is sufficient, with the hood tied very loose, and then it may be laid aside without danger, when he comes to be shut up after the purging is stopt. At night he may have a small feed of oats mixt with his bran, and the next likewise, if his purging continues so long. When it is quite gone off, he may be fed with clean oats till the time of the next purge, if another should be thought necessary. Coarse aloes generally make a horse sick, and therefore the best way is always to give him succotrine aloes. But if he happen to be sick, and will not touch warm water, you must be obliged to allow him that which is cold, otherwise the physick will not work as it ought to do. Some likewise have a natural aversion to warm water, and then they must have the same indulgence as before.

Since I wrote what is above relating to the drugs most proper for purging a horse, upon consulting Mr. *Gibson*, I have met with the following prescription, which is exactly agreeable to mine, except in the quantity of rhubarb, which I still think to be generally sufficient. He has omitted the oil of aniseed, without giving any reason for it; but I make no doubt but it was conformable to that which I have mentioned, for he treats more accurately than any that went before him on the subject of farriery.

Take

Take of the finest succotrine aloes an ounce; of ginger grated a dram; of rhubarb in powder a dram: make them into a ball with a sufficient quantity of the syrup of damask roses.

What he says of the price of rhubarb is of small significancy, especially when a horse of any value is concerned. There are several drugs which may be conveniently mixt with compositions of this kind; but will be more properly spoken of under the diseases to which they relate. There are several bad consequences which often attend the exhibition of coarse aloes and other unwholesome drugs; but as I have not recommended any such, I am the less concerned in shewing how to remedy those disorders. I shall only observe, that when they take away a horse's appetite, he must be treated with cordial and stomachic medicines; and that when the purge works very violently, it may be stopped in the same manner as a looseness, omitting the purgative medicines. When a horse has caught cold, or taken bad drugs which cause him to swell, and will not work, then take an ounce of Spanish soap, with two drams of the oil of juniper, and make them into a ball with a sufficient quantity of honey. This will either ease the horse by promoting urine, or promote the operation by stool.

GLYSTERS may be applied to several intentions of cure; for some are emollient, and serve to soften the hardened dung, as well as to correct and temperate the acrid, and salt recrements: others evacuate the excrements out of the large gut; others strengthen their languid fibres, and help to quicken the peristaltic motion; others allay the exorbitant motions and spasms of the intestines; and others, again are useful to nourish horses where there is any impediment the usual way.

Before *emollient glysters* are made use of to soften the excrements, a person with a small hand should empty the strait gut, to make way for the injection of the glyster, that it may have a more certain effect. The things that soften dry, hard excrements, and correct the

acrimony of the humours in the hard guts, are a decoction of sheeps-trotters, or calves feet, water-gruel, fat broth, oils, coarse sugar, treacle, a decoction of mallows, marsh-mallows, as well roots as leaves, linseed, ~~sœnugreek seed~~ and camomile flowers. All these are likewise good to relax spasms, which sometimes prevent the exit of the dung: and mitigate pains of the bowels, ease the cholick, and the like.

A principal ingredient in purgative glysters is salt, that is common salt, sal-gem, Epsom salt, and sal ammoniac; because a handful of common salt, for instance, will have a more certain effect than several ounces of purging ingredients. However any of these may be compounded with lenitive electary, electary of scammony, formerly called *caryocollinum*, syrup of buckthorn, sena, jalap, which may be mixt with two or three quarts of the decoction of emollient ingredients, or the same quantity of fat broth: they should never be very strong, and consequently coloquintida or the bitter apple is too violent to be ventured upon. When very strong glysters are wanted, they may be safely mixt with emetic wine, or twenty or thirty grains of emetic tartar. When a horse's dung has an acid smell, then Spanish soap, or common hard soap may very properly be mixt with the glyster: two or three quarts may be injected at once.

Strengthening glysters are of great use when the intestines and other parts have lost their due tone; therefore when the coats of the guts are to be strengthened, carminatives come in play, as caraway-seed, fennel-seed, cummin-seed and aniseed, bay-berries, juniper-berries, and their essential oil. In the palsy and sleepy diseases, rue, marjoram, savoury, rosemary, sage, and lavender flowers will be proper. In cold, low habits, when the blood is poor; the horse may receive benefit from glysters made with bitters, such as the tops of the lesser centaury, cardus benedictus, gentian, rhubarb, tincture of rhubarb, and elixir proprietatis.

Sedative glysters are very serviceable to relax spasms of the intestines, and to ease pains in the bowels: these may

may be made with oils alone, or they may be mixt with the fat of animals and fresh butter. When the coats of the colon are affected with a violent spasm which lessens its cavity, the wind will be retained, and violent gripes will consequently ensue, glysters compounded with such things as these will be very efficacious. If these spasms are attended with heat, the glysters will be best made with camomile flowers, elder flowers or vervain flowers decocted in whey or milk, with a little saffron and saltpetre, and then mixt with oil of sweet almonds. In the staggers you may add the seed and flowers of piony and the root of the wild valerian

Astringent glysters are made use of sometimes to stop loosenesses, especially when they are violent and have continued some time; as also when medicines given by the mouth have had no effect. These may be made of pomegranate-rind, oak-bark, galls, balaustines, red roses, and the like. In the decoction of some of these you may dissolve diatcordium or Venice treacle, for these last, besides the strengthening ingredients of which they consist, contain a certain quantity of opium, which is generally found very serviceable in these cases.

Nourishing glysters are often found to be beneficial, when the jaws of a horse are lock'd up in convulsive disorders, so close that nothing can be conveyed to the stomach that way. Sometimes likewise the throat and gullet are so swelled and inflamed, that it is impossible for the horse to swallow any food till the swelling is abated, and consequently he will be in danger of starving unless he is assisted some other way. These may consist of broths made with calves heads, sheeps heads, calves feet, sheeps trotters, mutton or beef broth, with the fat scum'd off, milk pottage, rice milk strained, thickened milk, or the like. A quart or three pints at a time will be sufficient.

All these glysters should be only milk warm, and injected with a pipe at least fourteen inches long, with holes in the sides like those for men, and should

have a bag at the end to squeeze it in gently, that the horse may not start, which they commonly do when they are injected with a syringe, which makes them return it immediately. When it is all pressed out of the bag, you need only hold down his tail close for a minute or two, and then he will retain it as long as is convenient to perform what is expected from it. Examples of all kinds of glysters may be met with in their proper places.

Some affirm glysters have no operation beyond the large intestines, but this is a mistake; for by affecting the nervous parts of the intestines which communicate with the nerves of the rest of the body, they not only produce very great effects, but insinuate into the blood and lymph, so that a horse may receive a great deal of nourishment by these means. Likewise we find by experience, that glysters have a great influence in mitigating the disorders of the small guts, which may be owing to the situation of the colon which surrounds them. For they not only are warmed and cherished by these means, but the steam or vapour of the medicine penetrates their coats, and by that means not only conveys its virtues thereto, but to all the contents of the abdomen.

Of ROWELING, FIRING, GELDING, NICKING, and DOCKING HORSES.

ROWELING is an artificial vent made between the skin and the flesh, designed to carry off the humours by revulsion and derivation, which are the cause of various diseases, and serves for the same purposes as setons and issues in men. It is of great use in diseases in the head, such as sleepiness, head-aches, the staggers and disorders of the eyes; the gutta serena, cataract, incipient suffusion, and catarrh; as also in aches and pains, cold phlegmatic swellings, and humours affecting the legs and other parts.

Some rowel their horses soon after they are taken from the grass, which may be proper enough if they
are

are not lean or hide-bound, or their blood watery. In this last case, it must not be done before the constitution is mended by a nourishing diet. For when the blood is poor, and the horse full of watery humours, there will be a great flux to the part, sometimes so great as to discharge several gallons of water before the rowels have come to a digestion. But whether this is not a more speedy and easy way to discharge the redundant water, than by purging, deserves to be considered; especially as incisions made in the legs and thighs of men have carried off the waters in a dropsy, when every thing else has failed. The only danger is lest such a discharge bring on a mortification, which may happen when the horse is very low indeed, and then diuretics with strengthening medicines are best, with good diet and moderate exercise, which must be continued till the watery humour disappears in the sheath and belly.

Rowels are likewise very serviceable in pleurifies and all internal inflammations. In which case there must be one on each side of the breast, one on the belly, on the same side the pain is supposed to lie, unless there is a great motion of the flanks, which may hinder its coming to digestion, and then he may be rowelled on the inside of both the thighs.

FIRING is the application of an actual cautery or red hot iron to any part for the removal of some disorder. The firing instrument or knife ought to be somewhat rounded on the edge, and to be much thicker at the back, that it may retain the heat the longer. You must always take care to rub it clean, that no dust or ashes may stick to it. The time of using it is when the flaming redness is gone off. After the operation, the seared parts must be bathed with spirits of wine, and then anoint the place with bees-wax and butter melted together. It is of great use in the cure of bonespavins, splents and wind-galls.

GELDING or castration is best performed by cutting open the scrotum or cod, and after turning out the itones, to tie a wax tread round the spermatic vessels, or strings, as some call them, to prevent their bleeding,

and cut them between the ligature and the stone. Afterwards apply pledgits with a digestive ointment mixt with spirit of wine. When this operation is carefully performed according to this direction, there will be no danger of a great loss of blood, which is often the case when the spermatic vessels are seared with a hot iron.

DOCKING, curtailiug, or cutting off a horse's tail, must be performed with a very sharp, clean instrument, and then seared with a hot iron. It will be best to be case-hardened, and very well polished, taking care to clean it from any ashes or scales it may have contracted by putting it in the fire. It must not be applied while in a glowing heat, for then the sparks that may fly off are apt to cause an inflammation of the part; at least the burnt part will stick to the iron, and come off when it is taken away, and then it will be very hard to form an eschar. But as this operation puts the horse to great pain, it is best to omit it and apply some slices of the agaric of the oak, or the common puff-ball, which will stop the bleeding effectually, and then it may be cured as a common wound.

NICKING the tail of a horse is an operation designed to make him carry it more genteel. There are particular machines or pulleys, so contrived as to keep the tail up, which may be better comprehended by seeing them than by description. The number of the nicks are to be proportionable to the length of the tail, but generally three are sufficient. When the operation is over, the wounds may be dressed with a mixture of powdered rosin, honey and spirits of wine; and a dossil of tow dipt in the same mixture should be laid between the nick, wrapping the tail up as usual. The next morning the covering should be cut open down the back part of the tail, and the following morning it should be taken quite off, in order to plait the hair, and set the tail. You should let the tail down every two or three days, and bathe the upper part next the rump with hot vinegar, in which a bit of alum is dissolved, and mixt with honey. If the tail should happen to swell, and the hair come off, it must be washed with a mixture of wine, vinegar, and Egyptian honey.

Of ROWELING, FIRING, GELDING, &c. 127

ney. When seven or eight days are expired, the horse should be suffered to stand without the machine or pulley for a few hours, that you may see how he carries his tail. He must likewise have his tail kept up a few hours every day, till the wounds are quite healed, or in other words, till a callus is formed.



Of the DISEASES of HORSES, *and their CURE.*

Of the APOPLEXY.

WHEN a horse has a true apoplexy, he falls down suddenly, without sense or motion, except a working of his flanks.

This may be caused by any thing that compresses the vessels of the brain; by too great a quantity of blood when the horse is fed plentifully, with little exercise; by being very much over-heated, so as to expand the blood and render all the vessels turgid; by any fluid shed outwardly on the membranes of the brain, from blows on the head or falls: by blood or serum poured into the brain itself, and by its pressure hurting the origin of the nerves, which is the most common cause of the apoplexy, and may be either blood or serum. This last most frequently happens to horses that have poor watery blood.

There are three degrees of an apoplexy; the first is when the blood is forced up into the head by any cause whatever, and distends the vessels of the brain, so as to hinder the free circulation of the blood through it. By this means the horse's senses may be impaired for a short time, but as the stoppage goes off, he gradually comes to himself. The second degree is when the stagnation continues so long, as to let the serum ooze through the vessels, which falling upon the side of the oblong or spinal marrow, cause a palsy. The highest degree is when the vessels of the pia mater burst and let the blood fall to the basis of the brain. This is almost always mortal.

The

The *signs* which precede an *apoplexy* are dulness, drowsiness, weak, watery and turgid eyes, feebleness, a disposition to reel, a bad appetite, hanging down his head, and resting it in the manger. When it is caused by serum in the brain, he has a disposition to rear up, and is apt to fall back when handled about the head. Young horses are most subject to this kind, and with proper care may get over it. When the vessels on the inside of the brain are burst by blows or wounds, the horse will be frantic by fits, and start and fly when any thing comes near him. Something like this may happen from an induration of the membranes of the brain, and then the cure is desperate. When horses fall down suddenly with a violent working of their flanks, without power to rise again, they seldom or never recover.

When this last happens to be the case, the only possible cure consists in plentiful bleeding, and therefore several veins should be struck immediately, one after another, in different parts of the body. His head and shoulders should likewise be raised, with straw put under them. If he survives the fit, several rowels should be cut, to drain off the humours as much as possible.

When the apoplexy happens only from the stoppage of the circulation of the blood in the brain, by the distension of the vessels from plenty of blood therein, then bleeding will prove a certain cure, even though he should reel and stagger, and sometimes fall down suddenly. After plentiful bleeding, his body should be kept open with scalded bran, and the usual quantity of hay should be lessened. The next day you may give him an aloetic purge, which may be repeated twice more at proper distances.

Take of the best succotrine aloes an ounce ; of the powder of jalap two drams ; of cinnabar of antimony half an ounce ; of the oil of aniseed thirty drops : make them into a ball with a sufficient quantity of solutive syrup of roses.

I have added the oil of aniseeds to this purge, because it is suitable to his distemper. On the days free from purging, give him the following nervous ball early in the morning.

Take aniseeds, caraway seeds, wild valerian root, lavender flowers, roots of piony, misletoe, of each two ounces; of cinnabar of antimony an ounce; of Virginian snake-root half an ounce; of saffron two drams; of oil of aniseed half an ounce. After these ingredients are reduced to a fine powder, mix in the oil, and make them into a mass for balls with honey or melasses. A ball of the size of a pullet's egg is a dose.

When the horse has been purged sufficiently, the ball may be changed for half an ounce of cinnabar of antimony, and half an ounce of gum guaiac united together with melasses, which may be given him every morning for three weeks longer. This by thinning the blood, and fitting it for circulation, may prevent a relapse.

Sometimes, as I observed above, a horse's blood may be so rarefied and expanded by violent exercise and hard riding, so as to cause a temporary plethora, and will distend the vessels of the brain, so as to impede the circulation of the blood there, hence the origin of the nerves will be compressed and the influx of the animal spirits into the nerves prevented, and consequently an inability of motion must ensue. Therefore it is no wonder that a horse so harassed should sometimes drop down suddenly, as though in a real apoplexy, especially upon any sudden stop. This happens more frequently in very hot weather, than at any other time, because that greatly promotes the rarefaction of the blood and humours. Bleeding in this case will soon bring him to himself, unless the violence of the shock occasioned by the fall has burst the fine vessels in the brain, and then there can be no hope of his recovery.

Of the STAGGERS, or the primary and sympathetic VERTIGO.

ALL distempers of a horse which cause him to reel, stagger, or fall down, are by some one or other called the *staggers*. Thus the *apoplexy*, and the *epilepsy*
or

or the falling-sickneſs frequently go by that name. It is a great miſfortune that we are not able to diſtinguiſh ſome diſeaſes of the head from others, becauſe we can judge of them only from ſome remarkable ſymptoms. Thus when a horſe ſtaggers and falls down ſuddenly, and afterwards recovers and gets up, it may either be cauſed by a ſlight apoplexy and epilepsy, or a primary vertigo, which laſt is likewiſe a diſeaſe of the head.

It is remarkable, that almoſt all diſeaſes of the brain are attended with coſtiveness, as well as the ſympathetic vertigo: but it is not the cauſe, as ſome imagine, but a ſymptom of this diſeaſe. The cauſe of the *ſympathetic vertigo* lies in the ſtomach and firſt paſſages, which are affected with ſpaſms or convulſive motions, which produce all the ſymptoms of the ſtaggers. For when the ſtomach or parts adjacent are conſtricted, they force the vital fluids to the head, where they ſtagnate among the veſſels of the choroide plexus of the ventricles of the brain, and produce a vertigo. In this caſe, the ſtomach and firſt paſſages are loaded with depraved humours, which generate wind, and hinder digeſtion. Hence the bile or gall becomes vitiated, and cannot ſufficiently ſtimulate the inteſtines to diſcharge their contents. This being the caſe, it is no wonder there ſhould be an obſtinate coſtiveness. This diſeaſe may likewiſe proceed from worms, which by gnawing the inteſtines, irritate them to convulſive motions.

The *primary vertigo* is likewiſe cauſed by a ſtagnation of the blood in the carotid arteries, and the veſſels of the brain which conſtitute the choroide plexus. Hence horſes that are full of blood and humours are moſt ſubject to this diſeaſe; eſpecially when they are high fed, with little or no exerciſe. This may be likewiſe owing to the ſerum of the blood when it is accumulated in the blood-veſſels of the brain; and therefore horſes that have poor watery blood may be afflicted by this diſtemper. Likewiſe violent blows on the head may produce either a ſtagnation or an ex ravaſation of the blood and humours, whence a more laſting and troubleſome vertigo enſues.

Befides

Besides the principal symptoms already mentioned, the horse has a dull look, is weak, with prominent eyes, his mouth is generally stiff, but not quite shut up, as in other cases; he stales but little, and his breath is short on the least motion. But the principal symptoms, as observed above, are costiveness, reeling and staggering, and sometimes falling down.

The vertigo which proceeds from a disorder of the stomach will cease as soon as it is cleansed. When it is caused by spasms of the lower part of the belly, attended with a weakness of the nerves, it is not so easily cured. But the primary vertigo is more out of the reach of medicines than the other two.

The intentions of cure are to discuss the blood and humours stagnating in the head, and to make it circulate freely in the lower parts; as also to strengthen the tone of the nervous system, regard being had to the cause which produces the stagnation.

When the disease is recent, and the body is full of blood and humours, with a strong beating of the heart, you should take away blood freely, and repeat it till the symptoms are mitigated. If the horse is costive, the strait gut should be emptied by a small hand, and then proper glysters should be often injected. They may be made with a decoction of senna, or of mallows and marsh-mallows, or fat broth; to three pints of either, a pint of linseed oil may be added, or a pound of brown sugar. They must be injected milk-warm, and repeated every day till he dungs freely. When the horse has been long costive, these will bring away surprising quantities of dung. This done, you may venture to give him the following laxative drink.

Take lenitive electary and Epsom salt, of each four ounces; of common treacle two ounces; of ale three pints. Put in the salt first, which will readily dissolve without heat; then the sugar, and last of all the electary. It must be given him in the morning upon an empty stomach, and will work before night; for Epsom salt has a more quick effect than any thing else. It must be made blood warm, and he must have water or warm gruel to drink after it.

It may be repeated three times, allowing two or three days between each, giving him an opening diet and proper exercise. When the vertigo proceeds from worms, he must be treated as hereafter shewn under that title. To strengthen the nerves, he may take the nervous balls mentioned in the last section.

Of the EPILEPSY or FALLING SICKNESS.

THE *epilepsy*, as I have just observed, is by some called the *staggers*, and not very improperly, because it is attended with the principal symptoms of that disease. It is caused by an irregular motion and circulation of the fluids in the vessels of the brain, and thereby hurting the senses and voluntary motions. This will better be conceived when we consider, that the arteries, when they enter the head, are divested of their strongest coat, retaining only a thin membrane which is void of all sense and motion, and is distributed into the cortical part of the brain and cerebellum, that it may supply a spirituous lymph to the nerves and nervous parts necessary for sense and motion. The blood that is left passes through the venous sinuses to the dura matter, and from thence by the jugular veins back to the heart, which is the fountain of the circulation. The dura matter is of a singular structure, for it consists of a peculiar apparatus of nervous and muscular fibres: these pass along partly in right, and partly in oblique lines, becoming more arched and circular about the lateral sinuses. The nervo-carnous fibres reach like pillars from one side of the three greater sinuses to the other, where there are also oval cells which enter therein, disposed according to the series of the veins. These fibres not only hinder the blood from dilating the cells too much, but by their successive contraction accelerate the progress of the blood into the jugular veins. The use of the pillars is by their motion to attenuate the thick blood which has lost its lymph; and the little cells serve instead of valves, to prevent the regress of the blood into the veins. Hence these sinuses have a systole and diastole not much unlike the heart.

Besides

Besides this, the dura mater has a tonic or rather elastic motion, in the same manner as the rest of the nervo-muscular coats and membranes of the whole body, which are animated by the animal spirits and arterial blood. The dilatory and constrictory motion of this membrane which covers the brain and cerebellum, the spinal marrow and all the the nerves of the body, not only promotes the circulation of the blood through the head, but the better secretion of the spirituous fluid undulating in the nerves. For when this elastic membrane is raised and expanded by the pulse of the arteries of the brain, the nervous pipes are rendered more fit to receive the animal spirits; because when after its expansion is increased by the appulse of the arterial blood, brought by the internal and external carotid and the vertebral artery, and the influx of the nervous fluid, it then contracts by its own proper spring, and in some measure compresses the cortical part of the brain, whence an exceeding fine fluid is more conveniently driven into the cortical part of the brain and into the origin of the nerves. While these several motions are carried on in a due manner, the circulation of the blood through the head will be more regular, and the functions that depend thereon will be rightly performed. But when these motions are impeded, grievous diseases of the head will begin to shew themselves.

These things being premised, it will appear, that when a gross or too great a plenty of blood stagnates within the sinuses of the dura mater, the systaltic motion depending thereon will be impeded, as well as the regress of the blood to the heart. Hence too great a quantity of blood will be carried thereto by the arteries, and so congested as to hinder the entrance of the fine, subtle, spirituous fluid; instead of which they will be filled with more gross elastic particles of an expansive nature, which will disturb the senses and motions, and pass into the fine tubes of the brain and nerves. Besides the blood stagnating in the sinuses of the dura mater and jugular veins will dilate the vessels too much, whence the nervous fibres will be compressed, which will cause a spastic stricture of this membrane, which is the proximate and principal cause

cause of an epilepsy. For by this means the fine arteries of the pia mater will be compressed, as well as the cortical substance of the brain; whence the animal spirits not being under the direction of the will, must rush with a greater force into the brain and nerves. And as the dura mater is the root from whence all other membranes take their beginning, there must needs be a great consent between them, which consists in the mutual communication of an inordinate motion. Therefore when there is a strong spasm of the dura mater, those nerves chiefly which serve for sensation will be greatly constricted, and the whole influx of the animal spirits will be intercepted. Hence it will follow, that in a complete epilepsy, all the senses, as well internal as external, will be suspended. On the contrary, there will be a great and stronger impulse of the nervous fluids into the organs designed for motion, whence the terrible distension, contraction, succussion and agitation may be deduced. Besides, it is certain, that as the eighth pair of nerves, called the *par vagum*, whose branches are dispersed to the principal bowels and nervous parts, for the performance of sense and motion, they will, while the animal spirits rush therein with greater violence, be hurried by a consent into violent, supernatural motions, the heart will begin to beat, the pulse will be strong and unequal, and the spittle will come foaming out of the mouth.

I have been the longer in explaining the nature of this disease, because it is little understood, and less attended to. I shall now come to the part which more immediately concerns practice.

When the cause of an epilepsy exists in the brain, it is then said to be *idiopathic*; when it proceeds from the fault of some other part, and is transferred to the head, it is then called *symptomatic*. The idiopathic generally arises from external violence, such as wounds and bruises of the head: sometimes from a fracture or depression of the skull, which are commonly fatal: and after death we usually find stagnated blood or corrupt serum between the dura mater and the pia mater, or between the skull and the dura mater, or splinters of bones fixed in the dura mater. This may be likewise
caused

caused by the obstruction of the jugular veins, or the sinuses of the dura mater, particularly that called the *falciform*, with viscid blood or polypous concretions.

The *symptomatic epilepsy* proceeds from an impetuous translation of impure blood to the head, when the stomach and intestines are affected with spasms and inflations, while the peristaltic motion is greatly injured and perverted: or an impure, acrid, caustic matter may be conveyed to the dura mater by the arteries, which may stimulate that membrane to a spasm. Sometimes it may happen from the injudicious healing of old ulcers, or by driving impure matter back which was thrown out on the skin.

When a horse has a fit of an epilepsy, his eyes are fixt in his head, he reels and staggers, and is insensible to every thing; he voids his dung and urine without knowing it; then he reels round and falls down suddenly, and stretches his legs out as if he was dead, only there is a brisk pulsation of his heart, he continues to breathe, and has a quick motion with his flanks. Sometimes his limbs are convulsed, and his legs are thrown about in a very violent manner. When the fit is going off, he commonly frothes at the mouth.

Some have mistaken the epilepsy for the gripes, but very injudiciously; for in the last distemper the horse is often up and down, rolls and tumbles, and is very circumspect in his motions, lest he should irritate the pain; and if he stretches himself out at any time, it is but for a little while.

The cure must be begun by making a revulsion by plentiful bleeding, which may be repeated as occasion requires. Then give him a ball made with wild valerian root, roots of piony, rosemary, lavender flowers, mistletoe of the oak, the lesser cardamoms, assa foetida, the oil of hartshorn, castor, oil of amber, seldom forgetting cinnabar of antimony. The following examples will show the method of compounding them.

Take of wild valerian root two ounces; of cinnabar of antimony half an ounce; oil of amber two drops; common treacle enough to make them into a ball. This may be given once or twice a day

at

at first, and afterwards once in two or three days, with the following drink after it.

Take valerian root, mistletoe, piony root, the tops of rosemary, of each an ounce; chop them small, and pour a quart of boiling water over them; let them stand an hour or two, and then pour off the infusion, to be given the horse after the ball. Or,

Take wild valerian root and mistletoe of the oak, of each an ounce; of assa foetida half an ounce; make them into a ball with honey. Or,

Take of wild valerian root an ounce; of assa foetida half an ounce; Russian castor and oil of amber, of each two drams; of common treacle enough to make them into a ball.

Instead of the drink above, you may boil three ounces of mistletoe in three pints of water, and pour off the decoction in the water he is to drink, which the horse will not refuse. While he drinks this water, the ball may be thus compounded.

Take wild valerian root, mistletoe of the oak, piony root, and conserve of lavender flowers, of each half an ounce; of common treacle or honey enough to make them into a ball.

But you must never forget in these disorders to keep the horse's body open, first by glysters, afterwards by laxative powders, repeating them occasionally when required.

Take the dried leaves of mallows and camomile flowers, of each an ounce; of mistletoe two ounces; boil them in a sufficient quantity of water, that there may be three pints of the decoction when strained, to which may be added four ounces of linseed oil, and as much coarse sugar; mix them for an emollient glyster, to be injected warm.

A purge may be made with a quart of the same decoction, four ounces of lenitive electary, and as much Epson salt. Sometimes a horse must be under a course of these for a month.

Of CONVULSIONS.

THE cause of the epilepsy, as has been explained in the foregoing section, is seated in the brain, whereby

whereby the nerves proceeding from thence are affected. But convulsions proceed from any cause that may affect the nerves of the spinal marrow, which occasions a spasm or cramp of the nervous, muscular and membranous parts.

This universal cramp is sometimes occasioned by bots in or near the stomach, and then it seizes the horse of a sudden; but when it proceeds from disorders of the internal parts, he will first fall off his stomach, after which he soon grows feeble and dispirited, and becomes short-breathed with the least exercise. But as these symptoms are common to other diseases, this is seldom known till it is too late to apply remedies.

When this disease is caused by bots, it generally makes its attack in April, May, or June, among horses that are pampered for sale, with little or no exercise. Bots in the stomach are of an orange colour, of the size of the large maggots, and not unlike them, only they have sharp, prickly feet on each side of the belly. Their seat is round the lower orifice of the stomach, immediately under its inner coat, and when they begin to be animated, they burst through it with the tail foremost, while their heads remain firmly fixt in the muscular coat. The symptoms of convulsions from this cause, are an eager look, as though the horse wanted a feed of corn: the nose lifted up towards the rack, while his ears are prickt up, and his tail cocked: then his neck grows stiff, cramp'd, and almost without motion, and in a few days time, if he lives so long, several knots will arise on its tendinous parts, and the muscles of the whole body will be so affected, that he looks like a statue fixt to the ground, with his legs stiff, wide and stradling; his eyes become fixt, with a deadness of his looks, and his skin is tight on all parts of his body: he pants continually, with shortness of breath, and snorting and sneezing: the shortness of breath continues, unless timely relieved, till he drops down dead. The symptoms are much the same when it proceeds from imposthumations, ulcerations, or other hurts of the diaphragm and viscera.

For the explanation of this disease, we must consider that the spinal marrow, like the brain, consists
of

of a cortical and medullary substance, which are continued from the brain, and are wrapt up in one common membranous covering, which adheres to the vertebræ of the back : as also with three other coats, the inner and middlemost of which proceed from the pia mater, and the outermost from the dura matter, and is lodged in the cavity of the vertebræ. It has arteries and veins disposed throughout its substance. It receives the arteries from the vertebral, and the descending trunk of the great artery. The blood is carried back by the veins, first into the vertebral sinuses, from thence into the veins of the vertebræ and others, from whence it is poured into the vena cava ascendens. The function of the spinal marrow is to send out thirty pair of nerves, and two spinal nerves which tend to the par vagum. These nerves go first to the muscles of the neck, breast, back, belly and limbs, and serve for the motion of the parts. Then they are distributed to the viscera of the chest and lower belly, and to their membranes. Lastly, some large branches go to the face and head, contributing greatly to their motion.

Now whoever compares this cause with the symptoms of the disease, will readily find the close connexion that there is between them. But here it is to be noted, that the convulsive irritation of the said parts may happen two ways : for either the coats of the spinal marrow are primarily irritated and convulsed, and may bring the parts connected with it into the same condition : or these parts may be first affected with spasms, and may communicate them to the spinal marrow : whence again they will proceed to other parts and regions. Hence the first may be called *idiopathic convulsions*, and the other *sympathetic*.

Hence we may perceive, that convulsions may be caused by a vitiated blood, particularly when the matter of internal ulcers is absorbed by the circulating fluids, it will render them acrid, and fit to produce this disease. Again, these spasms may arise from a vellication of the coats of the stomach and intestines. For all the nervous membranes are very prone to irregular motions, and sometimes from a very slight cause. For since the stomach has its nerves from an external branch of the eighth pair,

pair, as well left as right, and since it has branches which proceed from the first and second vertebræ of the back; and because the intestines likewise have branches from the internal branch of the eighth pair, concurring with the intercostal, and forming the mesenteric plexus; the reason is plain why the spasms of those parts are communicated to the membranes of the spinal marrow and to the whole nervous system. Hence it appears that nothing can be more likely to produce these convulsions, than worms gnawing the stomach. The same may be said of ulcers of the internal parts, and particularly the diaphragm or midriff, which is a tendinous and nervous part, and consequently is very liable to be irritated, and to draw the nerves of the spinal marrow into consent; especially as the branches of the nerves which are distributed on this part communicate with those of the stomach, and have the same derivation.

The cure of this dire distemper depends in a great measure on the closing or shutting up of the horse's mouth; if this happens immediately, as it sometimes does, the case is desperate, for nothing can be given him by the mouth, and glysters will not reach the part affected. But if the mouth continues in such a state, that he is still able to take a medicine, there is hope of a cure. When a horse is seized suddenly in the manner above described, that is lately come out of the dealer's hands, we may safely conclude that the disease proceeds from bots in the stomach: and then before his mouth is shut up, give him the following ball.

Take of mercurius dulcis half an ounce: of aloes six drams; of conserve of wormwood enough to make them into a ball, which must be rolled in wheat flour: let it be washed down with a hornful or two of warm water.

This being done, we must immediately proceed to medicines that will allay the spasms, and relax the spasmodic strictures of the nervous parts. The following drink is very efficacious for this purpose.

Take valerian root, mistletoe of the oak, camomile flowers, of each two ounces; of saffron two drams: pour five pints of boiling water upon them
and

and when it is almost cold, put in four ounces of the fetid tincture, and two ounces of the tincture of castor, which must be shaken together every time it is used. The tinctures are to be had at the apothecary's.

Gibson directs half an ounce of *assa foetida*, and the same quantity of castor in substance, but every apothecary's apprentice knows, that boiling water will take up little or nothing of the virtues of these drugs, especially the former; and therefore the drink, as I have ordered it, is much more powerful. You may give the horse three hornfuls at a time, and repeat it three or four times a day. The outward parts may likewise be rubbed with a proper liniment, as in the palsy.

Take the green oil of the shops, oil of bays, opodeldoc or the saponaceous liniment, of each four ounces; of oil of amber two ounces; of flour of mustard seed two ounces; mix them.

This must be rubbed well into the spine of the back and loins; the cheeks, temples, neck, and shoulders; and particularly into those parts which seem to be most affected with the cramp. Or if you mix the saponaceous liniment or opodeldoc with the flour of mustard seed, it will have a good effect; as will friction alone with a haircloth, especially about the head. But it will be best if two or three are employed at once to rub the horse; and if this is carefully done, the horse may be brought out of the fit without any other external application.

If by the management above directed, the horse get the better of the fit, the cure may be compleated with gentle aloetic purges, which are very good for worms alone, though not strong enough for the first doses. The common farriers fill them full of rowels, and inject glysters. But these last, as I observed before, cannot reach the seat of this disorder; and rowels, if they would do any good, have not time to digest. However, when the horse's mouth is shut up so close that nothing can pass that way, it may be possible to relax the spasms with antispasmodic glysters, and to nourish him with milk porridge injected in the manner of a glyster several times a day, and made with a full proportion of oatmeal. The glyster may be as follows.

Take

Take rue, favine and garlick, of each an ounce; of camomile flowers two ounces; boil them in two quarts of water to three pints; and while it is pretty warm, add of the fetid tincture two ounces; of oil of amber half an ounce; of common treacle four ounces; mix them. In boiling the ingredients the garlick should not be put in so soon as the rest. Let it be injected milk-warm.

And here it will be necessary to observe, that opium has a power of taking off cramps of the muscles more than any thing else; and therefore if you boil the above ingredients in three pints of water, reserving a pint to dissolve half an ounce of opium in, which must be done when it boils: you may add this solution to the glyster, and perhaps gain your end sooner than any other way.

When a horse falls into this distemper from internal ulcers, he seldom recovers, because it is a sign they have made a great progress. However it is necessary to observe, that mercurius dulcis in this case is of no use. But if the disease is moderate, cephalic remedies and rowels may be sufficient to work a cure.

When this disorder proceeds from the blood, it is the mildest of all, and may be cured in the same manner as the epilepsy, with cephalic medicines and cinnabar balls. The purge that may be given to a horse when he is a little recovered from the fit, may be as follows, and may be repeated once a week, for three weeks or a month.

Take of succotrine aloes an ounce; gum guaiac and extract of wormwood, of each half an ounce; of saffron a dram: beat them together, and make them into a ball with syrup of ginger.

Of the LETHARGY.

THAT we may understand the nature of a lethargy the better, it is necessary to consider how it is caused; which may be by any thing that hinders the influx of animal spirits from the cortical part of the brain into the medullary part. This may happen from too

too great a relaxation of the blood-vessels in the brain, which renders its motion more languid, and consequently less fluid; this may be the case of old horses. Or from a difficult circulation of thick, impure blood through the brain, whence the brain is compressed. This is the case of horses that are plethoric; that is, that are high fed, with little exercise. Or from too great a collection or extravasation of serum in the membranes of the brain. This is evident, because a suppression of urine is always attended with sleepy disorders.

The symptoms of a lethargy is the reclining his head to one side, at the same time resting his mouth in the manger, with a stupor and insensibility: he often falls asleep with his meat in his mouth, and is apt to swallow his oats whole when he is roused, and immediately falls asleep again.

When the disease is moderate, and the horse young, with a tolerable appetite, especially if he seems to retain his smell and taste, it may be easily cured. For if he eat up a mash freely, without dosing over it, you may judge that his senses are pretty good. If a thick, white matter run from his nose, it may yield relief. The same when he drinks freely, or if he lies down and gets up carefully.

But if the horse is old and past his strength; if he seems to be stupid and senseless; if he dungs and stales seldom, or in his sleep; if a matter running from his nose sticks like glue to his nostrils, and as it increases, turns ropy, looking reddish or greenish, with an increase of the lethargy: all these are very bad signs, and show that it is scarce possible for the horse to escape.

In the cure, we are to endeavour to rouse the horse from sleep; to remove the difficulty of the circulation of the blood in the brain; or the stagnation of the extravasation of the blood or serum; and to restore the strength of the vessels and membranes of the brain.

When the eyes look full and red, they show that the disease is sanguineous, not serous, and therefore blood may be taken away, but not too much. Then give emollient glysters three or four days running thus:

Take

Take of the dried leaves of mallows four ounces ; of dried camomile flowers two ounces ; of sweet fennel seeds an ounce : boil them, and strain off the liquor, then add half a pint of linseed oil, and four ounces of common salt.

The salt is added as a stimulus to cause an irritation, which sometimes has a very good effect.

As soon as you can, after bleeding, give him the following drink, which is both pectoral and cephalic.

Take of wild valerian root four ounces ; rosemary, sage, sliced liquorice root and leaves of colts-foot, of each an ounce : pour two quarts of boiling water upon them, and let it stand till it is cold, then strain it off.

After some time, you may add four ounces of the fetid tincture, which is made by dissolving four ounces of *assa fœtida* in a quart of spirit of wine. This will tend to quicken his senses, retrieve his spirits, and promote the circulation of the blood through the brain. After two or three days, or before, if his nose begins to run, you may blow a little of the following sneezing powder up his nostrils with a quill.

Take of the dried leaves of *asarabacca* an ounce ; of white hellebore a dram : mix them and make a powder.

When the sleepiness proceeds from a serous cause, it may be used at any time ; but if the eyes look red and full, it must not be blown up till that symptom is removed.

When the horse begins to come to himself, and his strength and spirits return in some degree, then give him the following ball every morning fasting for a fortnight or three weeks.

Take gum guaiacum, *assa fœtida* and cinnabar of antimony, of each half an ounce : and beat them into a ball with a sufficient quantity of oil of amber.

When these things have been used as directed, it will be proper to cleanse his body with two or three laxative purges, mixing such ingredients with them as will thin the blood, and then the cure will be perfected.

Take

Take of succotrine aloes an ounce ; of gum guaiac half an ounce ; of cinnabar of antimony two drams ; of oil of aniseed thirty drops : make them into a ball with solutive syrup of roses.

Of the P A L S E Y.

THE palsy is one of the principal diseases of the head, which affects the brain and nerves, and therefore it will be proper to give an account of animal motion, that we may the better understand the nature of this disorder.

The animal spirits are an exceeding fine fluid, which is secreted from the arterial blood by the brain and cerebellum, and passing into the medullary substance and spinal marrow, is sent from thence into the fine tubes of the nervous fibrillæ, then into the nerves in all the parts of the body. When there is a sufficient quantity of this fluid, which is sent with a sufficient force into the nerves and nervous membranes, it renders them tense, by which means they are said to have a proper tone and elasticity or spring, whereby sense and motion are duly performed in all parts of the body.

A nerve which is naturally tense, is always full of this fluid, and therefore when its extremity is slightly touched, the motion is communicated to the brain and the common sensorium with a wonderful swiftness. This is called the action of the senses. The muscles are the instruments of voluntary motion. These consist of tendinous and fleshy fibres, which are every where interwoven with the nervous fibrillæ, which perform their functions in the following manner : The tendinous and fleshy fibres ought to be so filled with lymphæ, that they may in some measure impede the motion of the blood through the muscles. This inflates the belly of the muscle, and renders it shorter, whereby its end, with the part connected to it, is moved towards the place from whence it takes its rise. While this continues, the muscle feels harder to the touch, and resists the impression of the finger : hence we may conclude, that there

is required greater force, and a more plentiful influx of the animal spirits for the performance of motion than for sensation.

These things being premised, it plainly appears, that when the influx of the animal spirits into the nerves is lessened, their action as well for sensation as motion will in part be abolished. From this fountain those diseases flow, which come under the title of paralytic disorders. By this we understand a diminution of motion or perception, which depend upon the influx of the animal spirits into the nerves being diminished.

There are various degrees of this disease; for when the voluntary motion and animal functions, together with all sensation and the understanding cease, the animal will fall down as though struck with a thunderbolt. But sometimes, though the senses and understanding remain unhurt, the voluntary motions and animal functions cease, or at least the sense of feeling is either languid or quite abolished. The first case is called an *apoplexy*, and the second the *palsy*. The apoplexy has three degrees; the first takes away all sense and motion; the second the use of the understanding and all voluntary motions; the third is a slight degree of the second, and sometimes ends in a palsy. This disease has been treated of already.

That kind of a palsy which is called a *hemiplexy*, takes away the sense and motion of all one side of the body. A *particular palsy* takes away all sense and motion from a particular part, and is seated in the spinal marrow. A *spurious palsy* is caused by a translocation of some humour to the nerves, and only deprives the part of motion.

When a *hemiplexy* does not succeed an apoplexy, it begins with a vertigo or the staggers, and terminates by degrees in the loss of sense and motion, and the sound side is sometimes affected with spasms or cramps. A particular palsy is often preceded with slowness of motion, with tremors or shakings, and takes away the use of some particular limb or member. The part affected is soft, flaccid, and cold to the touch. But we should take care not to mistake the rheumatism and pains

pains of the joints for the palsey ; for those are attended with pain, the cramp, and convulsive twitchings.

Sometimes the particular palsey affects the hind parts, while those above the diaphragm continue sound ; and if they lose sense as well as motion, the dung and urine will come away involuntarily. Sometimes there may be a palsey of the eyelids, and then a horse cannot raise them up ; sometimes of the top of the gullet, and then he cannot swallow ; as also of every other part of the body, which may be known by the function which is hurt.

When a horse is seized with a hemiplexy, he always falls down suddenly ; and though he has the use of his limbs on one side, it is impossible to set him on his legs ; in which case it is not worth while to attempt a cure ; for though he should in some degree recover, he will never be fit for use afterwards. When the hind parts are affected with the palsey, it is a very troublesome disease, because the horse must be supported behind till the use of his limbs are recovered in a great measure. When the palsey affects one limb only, the danger is not so great, especially if it is accompanied with an involuntary shaking. As for the numbness of the limbs, occasioned by the horse's lying out late in cold grounds ; it is not the palsey properly so called, but rather a kind of rheumatic disorder. When the horse is very old, though the palsey seizes but one particular part, it is very hard to cure. But if the horse is young, and the disease proceeds from bad diet or other improper management, there is no danger of his recovery by the use of good medicines.

The cure of this disease must be attempted with bleeding, rowels, and stimulating embrocations outwardly and inwardly, with the same medicines as are given in the apoplexy and convulsive diseases.

The following oil is very penetrating, and may greatly contribute to the cure, when rubbed into the part affected, after it has been well rubbed with a dry woollen cloth. This is absolutely necessary, for sometimes frictions alone will perform a cure, if done well and frequently.

Take the green oil of the shops and oil of bays, of each four ounces ; of oil of amber three ounces ; of camphire an ounce : rub the camphire with the green oil in a mortar till it is well mixt, then add the rest gradually.

Sometimes the saponaceous liniment or opodeldoc, which is made with spirits of wine, camphire, and soap, will be sufficient of itself ; or you may mix an ounce of the flour of mustard-seed, with half a pint of the saponaceous liniment. When the muscles about the face, temples, or mouth are affected with spasms, so as to be drawn awry, these parts must be embrocated with the above oil.

Of a GUTTA SERENA.

A GUTTA SERENA is a blindness or abolition of the sight, when no fault appears outwardly in the eye.

Many lay the fault on the obstruction of the optic nerve by a thick lymph as the cause of this disease ; in such a manner as to hinder the afflux of the animal spirits to the retina. But it does not appear from anatomy, that the nerves have canals or tubes wherein the nervous fluid may run in a direct path. Nor is the lymph which is derived from the brain thick or viscid. Hence it is scarcely probable that there should be an obstruction of the optic nerves from matter proceeding from the brain. In this case there is only a compression of these nerves, which hinders the influx of the animal spirits, and by that means procures a palsy therein. Hence it follows, that a gutta serena is a palsy of the optic nerves.

It is plain from anatomy, that the optic nerve, as soon as it enters the boney orbit of the eye, and has penetrated the periosteum that invests it, then deposits the outward covering which it received from the dura mater to form the sclerotid coat ; that the second covering derived from the pia mater goes to constitute the uvea, the ciliary processes, and the pupil ; as also that the medullary

dullary substance, serves to make the soft, pulposus coat called the retina. This last, it is well known, receives the pictures of visible objects, and propagates them by the optic nerve to the common sensory, to excite the idea of vision in the mind. Now, to perceive objects, there is need of the tension of the nervous parts, which consists in a due influx of the nervous fluid, as has been shown in the former section. But because in a gutta serena there is a palsy of the optic nerve, and consequently of the retina uvea, and the ciliary processes; it follows, that these parts can neither be tense nor receive the rays of light; and the pupil will likewise be amplified and dilated on account of the relaxed ciliary processes. This is the only defect that appears in the eye for the muscles of the eye and all other parts are in a good condition, because they receive branches from other nerves that are not affected.

The cause, therefore, which by compressing the optic nerves induces a palsy, is seated either about the thalami, or at the parts which are placed at their entrance into the orbits of the eyes. Or it may be in the optic nerve or rather in the blood-vessels, which lie in its middle part. These vessels which proceed from the carotid arteries, as well as the other branches which encompass the orbit, may be stuffed with stagnating blood, and so press and distend the medullary tubes of the nerves, and hinder the return of the lymph through the vessels which surround the nerves. This seems to be the cause of a periodical gutta serena, which, when the stagnation of the blood is removed, immediately ceases. Moreover, it appears very probable, that the spurious gutta serena is produced by serum which is shed within the coats of the eye, especially the sclerotic, and so encompasses the optic nerve. And this being pressed with the afflux of the nervous fluid, a part of it will gain a passage, and leave sight enough to distinguish light from darkness.

All these effects may be brought about by violent external causes, by blows on the head, by a concussion of the brain, by fulness of the blood, by violent

straining, by a vitiated blood, by a great loss of blood and other vital fluids.

With regard to the prognostics, if it be inveterate and perfect, and the horse old, there is no hope of a cure. But if it be recent and imperfect, the cause being only in the coats of the optic nerve, and the subject young, it may be sometimes cured. Likewise the periodical gutta serena, which depends only on the stagnation of the blood, may also be removed. But that which succeeds a palsy or other disease of the head, is scarcely ever vanquished.

When a gutta serena is coming on, the horse at first appears shy, especially to strangers; when he is brought into the light he pricks up his ears, and raises up his head as if he were looking at the light: he lifts up his feet when he walks, and sets them down with fear. When this disease is quite compleated, he will run his head against a wall.

The cure of the gutta serena is a very difficult task; because it is hard to prescribe remedies that reach the distemper. However we must try to discuss the stagnating humour which compresses the nerves, and afterwards to strengthen the parts affected. When the horse is poor and low, and his blood watery, we may judge serum to be the cause, and then he may be fired on the poll, because an actual cautery, by exciting pain, will communicate a tremulous and vibratory motion to the fine fibres of the brain, and remove the stagnating humour, especially if rowels are made in the neck at the same time, which may draw off the humours from the part affected.

On the other hand, if this disease is caused by a stagnation of the blood, as when a horse is plethoric, then the cure must be begun by bleeding in the vein nearest the parts affected, and his body should always be kept open by emollient glysters and laxatives. When the disease is inveterate, we must have recourse to cinnabar balls as the only anchor of hope, which may be compounded in the following manner.

Take valerian root and fennel seed, of each an ounce;
of cinnabar of antimony half an ounce; of oil of
aniseed

aniseed thirty drops; make them into a ball with common treacle, and give the horse one every morning, except the days on which he takes laxative physic.

The two first ingredients are very good to strengthen the vessels, and, together with the cinnabar, are very efficacious in opening obstructions.

Besides the above, it will be proper to blow sneezing powder up the nostrils, which may be either that mentioned in a former section, or the extract of the wood of guaiacum, which will purge the head very strongly.

Of MOON-EYES, or LIPPITUDES.

A LIPPITUDE is the distilling of a salt, sharp humour from the eyes, with pain, redness and dimness of sight, sometimes closing the eye up. This disorder has been called a *moon-eye*, from the supposed influence the moon has over this disease; or rather because it sometimes returns periodically, and as it has been thought at certain phases of the moon.

This disorder is but slight when there is no blemish in the ball of the eye, even though there is a swelling of the eye lids, with redness of the eye, if the running grows thick and condenses.

This disease generally attacks a horse when he is past five or coming six, at which time the eye lids begin to swell, sometimes so much as to be shut up, and a clammy water runs down the cheek, sometimes in a greater, sometimes in a lesser quantity. Sometimes the humour is so hot and corrosive, as to scald the cheeks and to fetch off the hair as far as it reaches. The veins of the temples, under the eye, and on the sides of the nose are generally turgid and full of blood.

It does not attack both eyes always at once, but sometimes one, and sometimes the other. In some the eyes run but little, and in others not at all; but then it is not properly this disease; especially if the eyes look deadish, sunk, and perishing. Sometimes the eyes are pretty clear; at others thick and muddy, of a wheyish or

dusky yellow colour. And yet at the best they are never sprightly, but look more weak and dead than they did before the disease began.

The seat of this disease is generally in the glands of the eyes, the chief of which is the lachrymal gland, placed in the orbit in the upper part of the greater angle of the eye, which pours out a salt serum that is absorbed by the lachrymal points, and conveyed by a peculiar duct into the nose. Likewise in the lesser corner of the eye there are several small glandulous bodies, which distil a thick serum. Under the eyelids there are other glands placed in a row, which send out an humour more glutinous than either of the former. Now the excretory ducts of these glands, consisting of nervous and fibrous coats, may easily be irritated by a salt, subtil serum, and so be crisped up or contracted by spasms, in so much that the reflux of the blood which is brought by the small arteries, may be in some degree prevented by the constriction of the veins, while the glandulous tubes may be enlarged by the quantity of the secreted humour, and from hence may proceed a great effusion of a salt sharp serum.

The redness and pain which attend this disorder, may be attributed to the acrimony of the humour, which in this case greatly abounds with salt of a peculiar nature, and quite different from that which is obtained from any other excremental fluid.

With regard to the prognosticks, this disease, as was above observed, is apt to go and come, but without any certainty in its periods. Sometimes the running will cease in a week, sometimes in a fortnight, three weeks, or a month, and then it will return again; but the time is uncertain, and indeed depends much on the method that is taken to cure this disease. If this disease is suffered to go on, or cannot be cured in two years it terminates in a cataract, when the humour is so hot, sharp, and viscid, as to inflame the eyes and glue them up. When the eyes are of a moderate size, properly shaped, and the continuance of the disorder after it returns short; when they look clear, when the humour

humour stops, and the sight continues good, there are great hopes of recovery. When the humour distils only from one eye, without shifting to the other, there is reason to expect a cure, or at least to save one eye. When the distemper proceeds from a violent cold, in consequence of which the eyes may be closed up, and the disorder may return several times, yet with proper management, blindness may be prevented. The eye sometimes may seem darkened with a sort of a yellow cloud, which may go off again without danger to the sight, provided there is no natural defect, and it disappears in a short time.

But the more certain signs of recovery, are the short continuance of the running, and the slow return; when the inflammation and swelling abates; when the eyes that seemed to sink and decay, grow plump and full; when the muddiness of the cornea, if any, is gone off, and the pupil looks clear and transparent, with nothing discoloured behind it; and when the horse on the road proceeds with courage, chooses his way, and leaves off starting. But when the eyes look flat and depressed, and decay gradually, it is a sign a cataract is forming, and that the disease will terminate in blindness. When there is a natural defect in the eyes, or this disease is hereditary, no remedies will reach the disorder.

The cure is to be attempted by sweetening the salt serum of the blood, by carrying it off by other outlets; and strengthening the glands by external remedies. The humours may be diverted from the eye by bleeding, glysters, and gentle purges, and their acrimony may be corrected by crude antimony, cinnabar of antimony, and *Æthiops mineral*. The eyes may be strengthened by wild valerian root, fennel seed, rosemary and lavender flowers made into balls of two or three ounces, and given the horse every day, unless he has had a glyster or a purge; as also by external applications.

Outward remedies, which have been most in vogue for the diseases of the eyes, are *tutty*, *lapis calaminaris*, and *white vitriol*. But it is but lately known that they are all three the offspring of zinc, which is a semimetal

and looks not much unlike block-tin. Lapis calaminaris properly speaking, is the oar of zinc; tutty is the recrement of zinc, which is gained by making brass with copper and lapis calaminaris; and white vitriol is made by dissolving zinc in equal parts of oil of vitriol and water, evaporating the water and setting it to crystallize.

Bleeding in this disorder is generally proper, unless the eyes sink, and look as if they were perishing. The eyes may be washed two or three times a day with the following water.

Take of white vitriol two drams; of camphire one dram; pour a pint of boiling water upon them, and when it has settled, decant off the clear for use. It may be applied to the eye and the parts about it with a bit of sponge or a fine rag.

Or mix white vitriol with fresh butter, and put a bit of the size of a horse-bean into the greater corner of the eye. This with proper internal medicines will often prove sufficient. When the veins that lie near the eye are turgid and full of blood, bathe them several times a day with vinegar or verjuice, till they are brought to their natural size. The horse may be purged with the following drink.

Take lenitive electary and cream of tartar, of each four ounces; of Epsom salt three ounces; of solutive syrup of roses two ounces: mix these with a pint of warm water gruel, and give it the horse in a morning fasting. Some time after, his feeds should be scalded bran, with moderate exercise.

To attenuate or thin the blood, and keep the horse's body open, the following may be given once a week.

Take of Epsom salt an ounce; succotrine aloes and gum guaiacum, of each half an ounce: make them into a ball with common treacle, and roll it in wheat flour.

On the intermediate days he should have a ball made with an ounce of wild valerian root, half an ounce of cinnabar of antimony, and half an ounce of gum guaiacum, for two or three months, till his eyes look clear and well. The valerian root may be sometimes changed for the same quantity of dried sage or lavender flowers.

When

When the horse's eyes are sunk, and look as if they were going to perish, you may try what good feeding will do, with a sufficient quantity of oats; for when a horse has been hard worked and low fed, this will often succeed without any other means, taking care at the same time to let his labour be moderate. You may safely wash his eyes twice a day with two parts of water and one of brandy. Salts and styptic medicines must be forborne, for they will do more harm than good. Instead of the laxative ball, he may take two drams of quicksilver killed with a sufficient quantity of turpentine, and mixt with half an ounce of fine succotrine aloes, and the same quantity of gum guaiacum, made into a ball with common treacle. He may take it every other day, for five or six times, unless it make him dung too much, which it seldom does, and then it must be given him at longer intervals. He should be kept fasting two or three hours after it, and then have only warm water and scalded bran. If it has a tendency to salivation, which may be known by the foreness of his mouth, and this last may be discovered by his manner of eating, he must be fed with water-gruel for two or three days, till the foreness is gone off: but there is very little danger of this, because the quicksilver almost always passes off by stool. On the intermediate days, the ball mentioned above with valerian root, &c. may be continued; as also after the mercurial course is over.

When there is occasion to invigorate the blood, and strengthen the solids, you may mix a quart of clear forge water with the water he is to drink, once every day. Or you may boil a pound of the shavings of lignum vitæ in three gallons of forge water, and allow him a quart a day as before. Or you may add a pound of old rusty nails to the decoction of lignum vitæ in spring water, while it is boiling; or a pound of the gross powder of antimony tied in a rag. The antimony in particular will be very proper when there is any breakings out in the head, neck, or other parts of the body.

Rowels may be serviceable for a time in drawing off the offending humour; but unless the blood is cleansed
by

by the above method, the disease will return when they are dried up.

I know not how a running eye, which is properly a lippitude, comes by the name of moon-blind, for this is more truly a disposition to a cataract; in which the eye is never shut up or closed, or runs, but looks thick or cloudy, and the horse sees little or nothing. If at the same time the eye sinks, and, as it were, dries away, it is in vain to attempt a cure, since no internal remedies will reach the cause of this disease; for a cataract being an opacity of the crystalline humour of the eye, attended with a hardness when it is ripe, it is no wonder that it will not yield to remedies. It cannot be denied, but the best authors who have wrote upon this subject are very confused in their accounts of moon-blindness; but if the symptoms are attended to, there is no danger of making any mistake.

Of SPOTS, FILMS, and the HAW of the EYE.

WHEN a horse has had an ulcer or wound of the eye, there will remain a cicatrix or scar in the same manner as in other parts of the body. When it happens in the transparent cornea, it appears like a white spot, more or less extended, and more or less thick, according to the nature of the wound or ulcer. The spot generally looks smooth and shining, and sometimes is eminent and unequal. In the opaque cornea it seldom appears at all, or at most very little, on account of the white colour of the membrane of the conjunctive.

There are several cicatrices of the cornea, but especially those of the transparent cornea, opposite to the pupil, which diminish the sight. Those that are very superficial hurt the sight but little, but those that lie deeper may entirely deprive the horse of vision. Since these are altogether incurable, whatever some may pretend, I shall say no more about them.

There is a spot in the eye, that is caused by a humour which is congested between the coats of the eye :
when

when this hardens, the spot is formed. Sometimes they are no bigger than a grain of millet seed, and when they are largest, they never spread farther. If they should chance to ulcerate, they may be readily healed with the powder of Florentine orris and sugar candy; or with the sapphire coloured water of the shops.

The LEUCOMA or ALBUGO is a white superficial spot on the transparent cornea, which hurts the sight while it continues. It may be distinguished from a cicatrix which is white and shining, by its being of a dull whiteness like chalk. It is likewise attended with a slight fluxion, a small inflammation and pain, and happens without any precedent ulcer. It may likewise be known from an ulcer, because in this there is a solution of continuity, and in an albugo there is none. When this disorder has continued a long while, an ulcer of the cornea may be apprehended, which leaves a cloud after it is healed that will never disappear. But while it is recent, it may be removed without leaving any trace behind it; for this reason we ought to cure it as soon as possible.

Some take it off with the gall of a pike or partridge, or the juice of celandine; and if these are too sharp, they must be mixt with a little of the solution of gum tragacanth: or you may take a sheet of paper, and make it up like a funnel; then set fire to the wide end of it, and as it burns, a small quantity of oil will descend to the narrow part: apply a drop of this to the spot with a feather, first diluted with spittle. Some use the oil of box in the same manner. Half an hour after the use of any of these, the eye must be washed with water mixt with a little brandy, and the medicine must not be applied again till the next day.

The following liniment is excellent in this case, which must be applied with a soft feather to the spot.

Take half a dram of myrrh, five grains of camphire, and as much of white vitriol: rub these together with two drams of honey, and as much fennel water as will bring them to the consistence of a soft liniment.

Or you may make a powder with Florentine orris, myrrh, and sugar candy, half a dram of each; and fifteen grains of white vitriol. A little of this may be blown into the eye with a quill. When the spot is vanished, you must compleat the cure with the eye-water mentioned in the section of superficial ulcers. *Films* are to be removed in the same manner. When the albugo is obstinate, make use of the powder with glass mentioned below.

The HAWS OR PTERYGIUM is a fleshy excrescence, which generally begins in the greater angle of the eye, and in process of time extends itself like a wing along the conjunctive, as far as the outward circle of the iris. Sometimes it reaches no farther than the corner of the eye in which it was bred. When it is recent and small, it will sometimes yield to remedies, particularly the following powder.

Take of cuttle-fish bone a scruple; of glass ten grains; of white vitriol fifteen grains; of Florentine orris half a dram; of sugar candy a dram: reduce these, especially the glass, into very fine powder. Blow some of this on the haw three or four times a day with a quill, and wash the eye, half an hour each time, with water mixt with a little brandy.

The glass serves to cut and excoriate the surface of the haw, to give way for the fluid contained in its vessels; and to excite at the same time a slight suppuration, as well as to procure a passage for the other remedies. Some make a powder with equal parts of sugar candy and crystal. The following collyrium is likewise good for this purpose.

Take of verdigrease a scruple; of Roman vitriol calcined to a redness sixteen grains; borax and pumice stone, of each twelve grains; of sugar candy a dram: mix them with four ounces of the juice of celandine in which a little gum arabic has been dissolved. Apply a little of this with a feather five or six times a day, first shaking the vial.

When

When a haw covers part of the eye there is a ligament runs along the verge of it that becomes horny like a gristle, which binds or compresses the eye. In this case, and likewise when the disorder will not yield to other medicines, we must come to manual operation; this is performed by taking hold of the membrane with a small fine hook, and cutting off so much of the caruncle as looks moist or spongy, with part of the membrane and gristle that makes a pressure on the eye. This done, dress it with honey of roses. But if after this the eye continues very moist, so as to be like to breed proud flesh, it will be proper to blow in equal parts of burnt alum and double refined sugar twice a day. In some cases it may be touched with blue vitriol to keep down the flesh.

Of BRUISES and WOUNDS of the EYE.

A Horse is very liable to blows upon, and bruises of, the eyes; and yet they are seldom so dangerous as might be apprehended: for sometimes an accident of this kind will make the horney coat of the eyes turn quite white, and yet they will come to themselves in a few days, only by bathing them with cold spring water, by the help of a sponge, four or five times a day. Or, Take a quarter of an ounce of dried white roses, and pour thereon a pint of boiling water; when it is cold, dissolve in it a scruple of white vitriol, and the same quantity of the sugar of lead for an eye-water.

When the eye is swelled or inflamed, it will be proper to bleed the horse, and bathe it with the above eye-water. When the case is bad, beat a dram of rock alum with the whites of two eggs, till they turn to a kind of a curd: spread this upon a pledgit, and bind it gently over the eye, renewing it when it is dry. Or lay conserve of roses on a cloth, and apply it in the same manner.

When the eye is naturally good, and has not been harassed with improper applications, it may be recovered,

red, though the case is seemingly desperate. For instance, when there is a defluxion on the eye, or the eyelids are swelled and moist, or the eye is inflamed, or is so full of anguish that the horse will not or cannot open it, then stronger applications may be made use of, if the alum curd will not do alone.

Take of rose water four ounces ; of honey of roses an ounce ; white vitriol and sugar of lead, of each thirty grains : mix them for an eye-water.

Sometimes a spoonful or two of red port wine may be added, especially if a thin humour runs from the eye. When there is any blemish or scurf or scar remains upon the eye, then blow equal parts of white vitriol and double refined sugar into it, night and morning, till the eye begins to look clear, and then the eye-water will be sufficient alone, once a day, till the cure is compleated.

When there is a considerable fluxion on the eye, rowels will help to divert the humours, and the horse is to be fed with scalded bran for two or three days, instead of oats.

WOUNDS of the EYE are not mortal, but on the contrary may be easily cured : yet those that are very bad, are not without danger, not only on account of the loss of sight, but because of the troublesome symptoms that may attend them ; such as fluxions, inflammation, pain, &c.

When wounds of the eye are not large ; when they don't change the disposition of the internal parts ; when they are not seated on the transparent cornea, over against the pupil ; and when they heal readily without supervening accidents, they will do no damage to the sight, though they penetrate the cornea, and let out the watery humour.

But when they are considerable, and change the disposition of the internal parts ; when they are quite cross the transparent cornea ; or when they are small, if they are attended with a fluxion, inflammation, or other accidents, they are almost always followed with loss of sight ; and this on account of the large cicatrices that remain, or by reason of the ulcers, abscesses or great suppurations that supervene, and are often the destruction of this noble organ.

Wounds

Wounds of the eyes that are made with sharp instruments are more easy to cure, *cæteris paribus*, than those that are made with blunt weapons. Those that are made on the side of the globe of the eye, without hurting the muscles of the eye, are easy to heal; but when the muscles or nerves are offended, or the eye is drawn more to one side than the other, or there is a palsy of the eye, or an abscess formed therein, the consequences are commonly bad.

In curing wounds of the eyes we should be attentive to prevent fluxions, inflammations, and pain, which are the most common symptoms that attend these accidents. This may be done by bleeding, repeating it occasionally; by roweling under the jaws, the breast, or belly, especially when the eye is much swelled or inflamed; by glysters, and by a laxative diet with scalded bran. If there be any strange body left sticking in the eye, or between the globe and the eyelids, it must be taken out.

In the cure, it will be proper to drop pigeon's blood into the eye, or breast milk, or cows milk with a little saffron infused therein, which will prevent an inflammation and pain. Then dip compresses in rose water and the white of an egg beaten together, renewing the dressings five or six times a day. Or you may mix a dram of tincture of myrrh with an ounce of honey of roses, and dip soft lint therein. In this case, dressing once a day will suffice till it is cured.

When the cornea is only prickt by a thorn or otherwise, and the aqueous humour should run out, it will fill again in a day or two's time, as I have several times observed. When there is no great inflammation, a wound in the cornea will heal insensibly. But if the inflammation is considerable, it will open the wound and let the watery humour out again, which had been renewed and kept in before, and sometimes the eye will become quite empty, and therefore we should always distrust this sort of wounds. But to prevent this as much as possible, we should dip two pieces of good flannel, of the breadth of two hands, in the following fomentation, letting them soak, and then wring out one, and apply it very warm, but not too hot, over the wound
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ded eye; and when the first begins to cool, apply the other. Let this be done alternately for half an hour, keeping the fomentation hot enough for the purpose. This management may be repeated twice a day, or oftener, till the swelling begins to sink, and the wound discharges laudable matter.

Take camomile flowers, elder flowers, and red roses, all dried, of each half an ounce, of marsh-mallow leaves an ounce; of sal ammoniac half an ounce: pour of boiling water upon them three pints. When the infusion is almost cold strain it off, and then add half a pint of red port wine. It must be heated again to dip the flannel in.

Of PUSTULES, ABSCESSSES, and ULCERS of the HORNEY COAT of the EYE.

PUSTULES which sometimes appear on the horney coat of the eye are of two sorts, *phlyctenæ*, and pustules properly so called. The former are like small blisters, the latter lie a little deeper, and are filled with purulent matter, like pimples on the face. These disorders are generally the consequences of the inflammation of the eye, when the blood contained in the enlarged vessels does not disperse, but turns acrid and corrodes the part in which it lies, with this difference, that the acrid serum occasions *phlyctenæ*, and the red part pustules.

As the *phlyctenæ* are transparent, they appear to be of the colour of that part of the eye in which they arise. When pustules arise on the conjunctive coat of the eye, they are reddish at first, and afterwards white. But when they are on the transparent cornea, they look dusky at first, and in time turn white. All the danger lies in their turning to ill-conditioned ulcers; and if they do, they are very hard to heal. *Phlyctenæ* are not so bad as pustules; and they are neither of them so dangerous on the conjunctive as on the transparent cornea. When they are over against the pupil they are worst of all.

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The cure of both are alike; and if they seem to be dangerous, you must begin with bleeding; keeping his body open, and making rowels as in the last section. Also dissolve five or six grains of sugar of lead in three ounces of rose water, and dip a compress in rose water and the white of an egg beaten together, and lay it over the eye. This must be removed five or six times in a day. When they are attended with pain, steep as much saffron in new milk as will make it of a fine yellow, and mix it with an equal part of the mucilage of quinces, and drop in a little of the mixture warm. Afterwards lay a compress over the eye dipt in the same mixture, and renew it every two or three hours. Note, this mixture must be fresh every day with new milk. The mucilage is made use of, because it is a little anodyne, and sheathes the acrid particles that offend the eye, as well as it gives a body to the mixture, that it may lie on longer without drying. When the pustules seem to give way, mix a little brandy with fennel water, and wash the eye two or three times a day, which will strengthen the eye, and bring it to itself the sooner.

When the pustule tends to a suppuration, apply some drops of the following eye-water to it ten or twelve times a day.

Take the root of marsh-mallows, camomile flowers and melilot, of each half an ounce. Boil them a little while in rose water and fennel water, of each six ounces; then add a scruple of saffron, and strain off the decoction.

Likewise dip a compress in this water, and lay it over the eyes, as before directed. When the pustules are long before they break, open them with the point of a lancet or needle, to prevent the matter from corroding the cornea, and rendering the ulcer more deep, which will be attended with a larger cicatrix.

When the pustules break of themselves, or have been opened, drop five or six drops of the following eye-water into the eye several times a day.

Take of lime-water a pint; of sal ammoniac a dram: let them stand in a copper vessel till the water becomes of a fine sky colour, and then it is fit for use.

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An *abscess of the cornea* is often a consequence of a great inflammation of the eyes, when it does not terminate by resolution. It sometimes arises spontaneously, like other abscesses, from a hot, acrid serum, or from an extravasation of the horney coat from external violence.

It differs from *phlyctenæ* and *pustules* in being more deep, and the matter that forms it more thick. While this abscess is forming, the inflammation is violent, and the pain is great, which continue till the pus is formed. Sometimes the abscess is so small as to take up no more room than a pustule, and sometimes it is so large as to take up a good part of the cornea. When the pus is collected between the pellicles of the external surface of the cornea, the tumour will point outward, like a nail; when in the middle, it is flat and depressed; and when more inwardly, there is no tumour on the outside.

The abscess of the cornea is a very troublesome disease, because it is often attended with loss of sight, either on account of the deep cicatrix it leaves behind it, or from the ulcer it may happen to turn to, which is always very malignant. Besides, the horney coat is sometimes eaten through, and then the watery humour will run out, which is often attended with a displacing of the rest of the humours; or lastly, the whole may suppurate, or at least a part of it, when the abscess breaks into the eye.

The smaller the abscess is, the less is the malignity, and may be soonest healed. Those which are on the outside of this coat are not so bad as those which lie in the middle of it; and those are still worse which are formed near the internal surface. Those likewise which are formed in the opaque cornea are not so bad as those in the transparent cornea; and the nearer they are to the middle of the pupil, the more dangerous are the consequences.

In the cure of this abscess, we must make use of medicines as well general as particular. The general are bleeding, roweling, glysters, and laxatives, as before directed. When the inflammation begins to abate, and the matter that is collected does not appear to be of a bad quality, you may attempt to disperse it by a decoction of the flowers of camomile and melilot, and the seeds of fennel, in equal quantities, in rose water: to which add saffron enough to colour it, and some drops of the tincture

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ture of myrrh. The eye may be washed with this, and compresses laid over it as usual.

When this or the like medicines do not discuss the humour, we must have recourse to the last remedy, which is to open the abscess with the point of a lancet to let out the pus, without waiting till it breaks of itself. The lancet must be applied to the most prominent part of the abscess, and penetrate so deep as to reach the matter that is formed, taking care, as the lancet is withdrawing, to make the aperture as wide as the semidiameter of the abscess.

Immediately after the opening you may apply new milk tinctured with saffron, or any other anodinic application, to ease the pain; and then the eye-water with lime-water and sal ammoniac described above.

Ulcers of the conjunctive and transparent cornea are common disorders, being the consequence of inflammations, pustules, abscesses and wounds; as also of the fluxions of sharp corrosive humours, which proceeding from the glands of the eyes, by continuing therein, cause a solution of continuity.

Ulcers are either superficial or profound. The superficial are usually caused by sharp corrosive humours, which eat into the eye; or by phlyctenæ, or by slight hurts of the eye. There are four kinds of these ulcers, which only differ in degree. The first is a slight ulcer which appears like a kind of mist upon the transparent cornea, and which occupies the greater part of it: this is nothing but the beginning of an ulcer, and is seated in the surface thereof, which some have called, but improperly, the cuticle. When this is healed in time, it leaves no cicatrix behind it.

The second is an ulcer like the former; but is somewhat more deep and more white, and generally takes up less room. When it is cured, it leaves a slight cicatrix behind it, which a little incommodes the sight when it lies over the pupil.

The third is a round ulcer and deeper than the former and succeeds the opening of pustules, looking white when in the transparent cornea, and appears reddish when on the conjunctive: when this is seated on the pupil it obscures the sight after it is healed.

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The fourth is a corroding painful ulcer, rough and unequal, of an ash-colour, appearing like a lock of wool, when seated on the transparent cornea. This is the worst of the superficial ulcers, because it is apt to degenerate into one that is deep and fordid. When healed it leaves a thicker cicatrix behind it than the former.

Deep ulcers are either caused by the opening of an abscess, or from other causes. They are divided into three kinds: the first is deep, narrow, and hard, and when it is seated on the transparent cornea, it does not change the colour, nor grow white after the cicatrization of the ulcer. When it affects the conjunctive, it is red on the edges, and blackish in the middle. The second is like the former, but larger. The third is a fordid ulcer, and the matter that runs from it is thick and of a bad quality.

It must be owned, the distinction of these ulcers is not very material; for the nature of them will readily appear upon inspection, as well as their differences; their names being of little signification.

The prognostics of ulcers may be drawn from the difficulty there is in healing them; from the pain and inflammation that attends them; from the nature of the ulcerated parts, and the symptoms that accompany them, such as the rupture of the cornea, the fungous flesh, the fistula, and the nature of the cicatrices. In particular, ulcers that occupy the conjunctive are not so dangerous as those that appear on the transparent cornea, much less on the pupil. Superficial ulcers are easiest to heal, and deep ulcers are attended with the most dangerous consequences. When a thin, corrosive matter flows from an ulcer, which corrodes the adjacent parts, they are cleansed with great difficulty, and threaten the destruction of the whole eye.

In curing an ulcer when it is superficial, use the following eye water.

Take three ounces of rose water, and dissolve in it ten grains of gum arabic. Then add five grains of white vitriol, and the same quantity of sugar of lead, with twenty grains of sugar candy. Make them warm, that they may dissolve the sooner.

Apply

Apply a few drops to the grieved part ten or twelve times a day, lay a compress over the eye, dipt in a mixture of rose water and the white of an egg beaten together. Or, instead of this, you may make it with the same quantity of rose water, ten grains of camphire, and the same quantity of white vitriol, with a scruple of sugar candy. The camphire must be rubbed with the sugar candy, and the water poured thereon by little and little. But it will dissolve more intimately if it be ground with a third part of a blanched almond first, and then add the sugar candy.

The camphire, by the subtilty of its parts, makes its way into the coats of the eye, and attenuates the gross matter ; and by its balsamic qualities corrects the malignity of the humours. When the ulcer is not cleansed by these means, the eye-water may be made stronger, by encreasing the quantity of the dry ingredients. But in all these cases the effects of the remedies must be duly attended to : for instance, when an ulcer of the eye dries up and grows hot, instead of being cleansed, we may conclude the remedy is too strong, and then it must be rendered weaker by increasing the quantity of water. On the other hand, when an ulcer is too moist, and grows foul, we may judge the collyrium is too weak, and then the water must be decreased. But when the suppuration is laudable, the ulcer grows cleaner, and the inflammation abates, the same medicines may be continued till another indication arises.

When the ulcer is deep, without any great degree of malignity, which is known by its white colour and evenness, by the matter not being acrid, and by the slightness of the inflammation, the following collyrium may be used.

Take four ounces of rose water and fennel water, and dissolve fifteen grains of gum tragacanth therein : then add aloes and myrrh, of each a scruple ; camphire and white vitriol, of each eight grains ; a scruple of prepared tutty, and half a dram of sugar candy : dissolve them as much as may be in the above water, and then strain them through a fine rag.

When

When there are signs of malignity, or when the edges of the ulcer appear callous, and the bottom discoloured, with a hot, sharp defluxion, and an inflammation, it must be corrected by collyriums of a stronger nature; thus,

Take rose water and fennel water, of each two ounces; prepared tutty, sugar of lead, crocus of antimony washed and prepared, and myrrh, of each a scruple; of sugar candy half a dram; of gum tragacanth fifteen grains; of saffron six grains. First dissolve the gum tragacanth in the water, and then add the rest, taking care that those ingredients which, will not dissolve, may be in very fine powder.

The crocus may be had at the shops ready washed.

This may be used as the other eye-water; but in the intermediate times of application, it will be proper to use the anodyne collyrium, with cows milk tinged with saffron, mixt with mucilage of quince seeds, to ease the pain, and to soften the ulcer.

When a blackish thick matter distils from the ulcer, it is then malignant, and the rupture of the cornea is to be apprehended, and therefore we must endeavour to prevent it as soon as we can.

Take of rose water four ounces; of verdigrease fifteen grains; of camphire ten grains, of myrrh a scruple; of sugar candy half a dram. First dissolve ten grains of sugar candy in the water, and then mix them well together in a marble mortar, pouring on the water by little and little at a time. Distilled verdigrease will be best because it is free from impurities.

Or instead of this, you may mix fifteen grains of blue vitriol, commonly called the *blue stone*; a scruple of myrrh, and a dram of the honey of roses, with the same waters. These need only be applied three times a day, making use of anodyne collyriums in the intermediate times. As soon as the matter begins to be white, all of a colour, and thick, while the other symptoms disappear, then we may use the others before mentioned to heal it and dry it up. Or it may be done by the following powder, a few grains of which is to be blown into the eye upon the ulcer with a quill.

Take

Take of white vitriol fifteen grains ; of aloes a scruple ; of sugar of lead ten grains ; of tutty prepared half a dram ; of Florentine orris as much ; of sugar candy a dram : reduce all these into a very fine powder for use. It is to be applied three or four times a day, using anodynes between whiles to allay the pain.

The following is a very good collyrium, and is useful in most ulcers of the eyes.

Take two drams of myrrh ; a scruple of white vitriol ; ten grains of camphire ; and half an ounce of sugar candy : boil some eggs hard, cut them in two, take out the yolk, and fill them with this mixture made in the same proportion. Tie them together, and set them upright on a hurdle over an earthen pan to receive the liquor that drops from them, which put in a bottle for use.

This is a general remedy for ulcers in the eyes, and so is the following, which has been used with very great success.

Take of butter as it comes from the churn unwashed, four ounces ; of tutty prepared an ounce ; camphire, sugar of lead and red coral prepared, of each half a dram ; of verdigrease twelve grains ; of pompholigos two drams : mix them well together, and put five grains in the great corner of the horse's eye, when he is most at rest.

In common diseases of the eye, particularly inflammations, the following is an excellent water

Take elder flower water and French brandy, of each three ounces ; of camphire ten grains ; of sugar of lead half a dram : first dissolve the camphire in the brandy, and the sugar of lead in the water, and then shake them together in a bottle. At the time of use you may warm this mixture, and then dip a linen cloth in it three times doubled, to lay over the eye.

Note, arquebusade is much preferable to plain brandy where it can be had, as it may in several places in and about London. It must be renewed several times a day.

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When the ulcers are entirely healed and cicatrized, if the eye continues weak afterwards, it must be strengthened with some proper eye-water. If there are cicatrices that hurt the sight, by being over or near the pupil, the remedy communicated by Sir *Hans Sloan* is most proper for the removal of them; because it has cured many eyes that were covered with opaque films and cicatrices, left by inflammations and apostems of the transparent cornea; I mean human eyes; and there is no reason to doubt, but it will have the same effect upon the eyes of a horse, when used with care and judgment.

Take of prepared tutty an ounce; of the stone called *hematites* prepared two scruples; of succotrine aloes twelve grains; of prepared pearls four grains: rub them together in a marble mortar, with a sufficient quantity of vipers fat to make them into a liniment.

This remedy is to be applied with a hair pencil once a day, without any thing else, if to take off scars or cicatrices, or if the eyes are only weak and sore; but in more grievous cases generals must be premised, as bleeding, laxatives, glysters, and roweling.

Of COLDs and COUGHS.

IN order to the explanation of a cold, it is necessary to know, that as the bodies of all animals consist of a vast number of pipes and vessels, through which the blood and humours are constantly circulating; it is no wonder that a great number of exceeding fine particles should be continually flying off, sometimes like a vapour, and sometimes like a fluid. This is called perspiration, and is greater than all the other secretions put together. It is caused by the constant dilatation and contraction of the vessels called arteries, by which means the blood is constantly thrust toward the excretory pores of the skin. Besides, there is an internal heat which is endowed with a rarefying virtue, and expands the fluids, opens the pores, and resolves moisture
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into exceeding fine vapours. Therefore, the greater the force is by which the fluids are impelled to the surface of the body, the greater will the perspiration be, unless the pores are shut up: and consequently whatever promotes and quickens the circulation of the blood, must needs increase perspiration. Hence it is plain, that as labour and exercise increase the pulse, they must of course increase heat and perspiration. We may observe likewise, that there is no promoting sweat without increasing the motion of the heart. Therefore, as the motion of the fibres and the course of the fluids is always more quick and lively in a pure serene air, we may conclude that perspiration is always in that case more free.

Sometimes there may be a great internal heat, with a dryness of the skin at the same time, as in fevers, which arise from a stricture of the pores of the skin, and then perspiration cannot be performed: likewise when the air is moderately hot and moist, the fine vessels under the skin are dilated, and the skin itself is rendered moist and turgid, which tends to consume the superfluous and excrementitious humours. The former exhausts the strength, and has a fatal tendency; whereas the latter preserves the vital fluids in their proper temperature.

Daily experience teaches us, that we perspire and sweat a great deal more in hot weather than in cold: therefore in the summer months all animals are more apt to sweat, than ever sweat at all. And as a free perspiration carries off many diseases; so when it is impeded, many disorders will be induced, which are of dangerous consequence; because a redundancy of impure juices will be generated thereby, which are disposed to corruption and putrefaction; particularly colds, running at the nose, coughs, rheumatisms, &c.

This redundancy of humours is more apt to affect the lungs and head than any other parts; because when a horse has been heated and suffered to cool suddenly, the acrid serum and perspirable matter drove back from the skin, fall upon the windpipe and lungs, and so occasion coughing. Therefore there is nothing more

likely to produce a cold than to bring a horse out of a hot stable into the cold air; because it immediately stops perspiration, and drives the sharp excrementitious matter to the inward parts, especially to the glandulous coats of the throat, mouth, nostrils, and bronchia of the lungs, producing a cough, running at the nose, defluxions, catarrhal, inflammatory, and other fevers. The same will happen from riding them till they are hot, and then letting them stand in the cold air; or from leading them through deep ponds while they are hot; or by putting them in cold damp stables; or by not rubbing them well and wiping off the sweat carefully when they come off a journey; for if the sweat be suffered to dry on, it will obstruct the pores of the skin and hinder perspiration. Sometimes epidemical colds appear in the spring, from the vapour that the heat of the sun draws from the earth: likewise in autumn and winter, when after a warm south wind a cold north wind succeeds, and produces the effects above-mentioned.

The first symptoms of a cold are a coughing, heaviness, and dulness, which is more or less perceivable according to its degree. When this happens, it will be best to feel between the jaws and behind the ears, to know whether he has any swelling in those parts, for these are signs of this disorder. Sometimes the eyes will be moist and watery: and when it is very violent, he will be feverish, and fall off his appetite, with a working at his flanks.

With regard to the prognostics; when the cough is strong, and the horse does not refuse scalded bran nor warm water, at the same time pricking up his ears and moving briskly in his stall, it is a good sign; as also when he dungs and stales freely without pain: it is likewise a good sign when his skin feels as it did when he was in health, and when his mouth is moist without being clammy. But when his coat stares, it is a bad omen; when his mouth is hot, dry, and parched, and his belly tuck'd up, there is danger of a fever: when a horse feels hotter than ordinary, with a working at his flanks; when he will not eat his meat, and refuses water;

ter ; when his eyes are very moist, his mouth slimy, his ears and feet cold, there is danger of a malignant fever.

Young horses are more subject to colds than those that are full aged ; especially when they are breeding their teeth, they sometimes have a cough and a slight fever, particularly before they cut their tusshes. Some young horses are troubled with a cough in the beginning of the summer from worms and bots.

In the cure, if a horse has got cold with a snorting and his appetite pretty good, you need only bleed him moderately, keep him warm, and let him have sufficient exercise, with a few cordial balls elsewhere prescribed, and a few seeds of scalded bran, together with warm water and oatmeal. But if he has lost his appetite, and feels hot, you must take blood away plentifully, and then give him some of the following drink warm. The dose is a quart in a morning fasting, and he must have neither meat nor water for two hours after. In this prescription I have followed *Gibson* nearly ; I say nearly, because he directs a handful, which is a very uncertain quantity, and is now left off by the best doctors.

Take hyssop, pennyroyal, colts-foot, horehound, linseed, aniseeds, of each an ounce ; of liquorice half an ounce ; of garlick six cloves cut small ; of saffron a dram : pour two quarts of boiling water over them, and cover them up to keep in the steam.

You may likewise make an infusion with Florentine orris, roots of viper-grass, liquorice root, leaves of male fluellin and hyssop, the flowers of mallows, elder and wild poppies, the seed of fennel and anise, and the bark of saffrafrs : these will soften and dissolve the coagulated thick matter in the lungs, and temperate the acrimony of the humours.

When there is a great defluxion on the lungs, it will be proper to divert the humours by keeping the body open with glysters and laxative purges, observing the same precautions as have been taken notice of before.

If you would have a drink immediately, that may be made without much trouble, dissolve a cordial horseball, which you are always to keep by you ready made, in a pint of warm ale or beer ; and it will prove of

great service, as it consists of balsamic and pectoral ingredients. You will readily find these balls by consulting the index.

If you should chance to be in a place where you cannot have all, or but few of the things above directed, then take three ounces of aniseeds and a dram of saffron, pour a pint of boiling water over them, and let it stand till it is of a proper heat to give the horse: it should be sweetened with two ounces of honey mixt with a glass of fallad oil. This, though a plain and simple medicine, may possibly have as good an effect as the more compound; for aniseeds seem to have some specific virtue in curing the disorders of horses.

Markham's cordial ball has been long in high esteem among farriers for a cold and a cough; that which follows is taken from *Markham's* own book, and is somewhat different from what I gave before, but not quite so good.

Take aniseeds, cummin seeds, fenugreek seeds, carthamus seeds, elacampane roots, flour of brimstone, and brown sugar candy, of each two ounces, beaten and searfed very fine; then take an ounce of the juice of liquorice, and dissolve it in half a pint of white wine; then take three ounces of the syrup of coltsfoot; fallad oil and honey of each half a pint: mix these with the former, and make them into a paste with a sufficient quantity of wheat flour.

The receipt that I gave before was from Sir *William Hope's* horsemanship; in which two ounces of the coltsfoot was ordered in substance, instead of the syrup; and an ounce of the oil of aniseeds was added; both which alterations make it a much better medicine than the other.

There is another amendment of the balls in *Quincy's* dispensatory, under the title of *pasta hippiatrica*, the meaning of which is the horse healing paste. From whence he had it I cannot tell; for it is evidently not his own, from the choice of the ingredients. He mentions one ball that Dr. *Ratcliff* was the author of: I wish he had given it us instead of the following.

Take powder of fenugreek seeds, aniseeds, cummin seeds,

seeds, carthamus seeds, elecampane root, coltsfoot leaves, flour of brimstone, of each three ounces; juice of liquorice an ounce; oil of olives and honey, of each eight ounces; of Genoa treacle twelve ounces; of oil of aniseed an ounce; of wheat meal a pound and a half, as much as is sufficient to make it into a paste, which roll into balls.

The reason why I think this is not *Quincy's* own, is because he orders carthamus seeds, which are now, and were then, out of use. Besides, he has ordered twelve ounces of Genoa treacle, which is no where explained in all his Dispensatory. Now whether Genoa treacle is a cant name for common treacle, or whether it means *theriaca andromachi*, which we call Venice treacle, and made at Genoa, I must confess I am at a loss to know. There may be some wholesale dealers in London that may be able to tell what it means, but I have not had the luck to meet with any of them. However *Gibson* seems to have been acquainted with the composition; for he says, "When they are faithfully made, they are of general use in distempers of the stomach, lungs, liver, and viscera, as well as in colds; and will serve to mix with other medicines upon many occasions. They will cure recent colds without any other remedy. And if half an ounce of *Æthiops mineral* be worked into a ball with treacle, and repeated every morning with warm water and masses of bran or malt, they will cure horses troubled with worms, attended with a cough."

See Worms.

And now we are upon the subject of cordial balls, it will not be improper to give you *Dr. Bracken's*, and then you will be better able to judge of the merit of the rest.

Take aniseeds and carraway seeds finely powdered, of each an ounce; of greater cardamom seed half an ounce; of Spanish juice dissolved in hyssop water two ounces; liquorice powder an ounce and a half; of wheat flour enough to make them into a stiff paste. When the whole has

been beaten in a mortar, keep it for use in a bladder tied.

With this ball he compounds the following medicine for colds.

Take half a pound of my cordial ball ; two ounces of hoglice fresh gathered ; of precipitated sulphur one ounce ; of compound powder of tragacanth half an ounce ; of balsam of Tolu in fine powder an ounce ; of Chic turpentine half an ounce ; of syrup of balsam as suffices to make the whole into a proper consistence for balls

I have made no other alteration in this prescription, than by giving the names of two of the medicines as they now go by, since the alteration of the London dispensatory : and I shall only observe, that it will be a hard matter to get good balsam of Tolu that will powder, and therefore it must be first mixed with the turpentine to render it more fluid, and then beaten together with the rest.

“ This ball,” says he, “ cannot be outdone by any
“ medicine in the whole materia medica ; I mean for
“ curing colds in horses. Half an ounce should be gi-
“ ven at a time, before the horse has his water, morning
“ and evening ; and he should have a slinging canter
“ afterwards for about a quarter of a mile, and then
“ walking exercise. While his indisposition lasts, his
“ water should not be cold, but rather what we call
“ white water.”

The medicines made use of for a cold should be given as long as the cold continues ; for sometimes it will be a fortnight before it breaks, and as much longer before it goes quite off. During the cure the horse should be kept warm and covered, especially about his neck and head, because they are generally most affected. When a horse is suddenly seized with a violent cold which depresses his spirits, the riding and exercise should be forborne till he has been blooded and proper evacuations have been used. When the cold is obstinate, and the horse full of flesh, he must be rowelled, and then exercise will help the working of the rowels, and promote

promote the running at the nose, when the disorder discharges itself that way.

When horses have a cough at the time of cutting their teeth, it is generally pretty strong, and continues till all the teeth are grown. This cough is entirely symptomatical, and arises from the consent of parts; therefore the chief thing to be done is bleeding, to alleviate the symptoms. Sometimes a swelling in the roof of the mouth will supervene, called the lampass. When this rises higher than the teeth, the horse will mangle his hay and stabber. This disorder should be left to itself, without attempting a cure; for whatever repels the humour will endanger the eyes: much less must the running be stopt, which will begin as soon as the foreness of the gums goes off, and will continue four or five days, or a week, before it ceases. When any disorders of the eyes attend the cutting of teeth, they must be treated as directed in the section of disorders of the eyes.

Of FEVERS in general.

A FEVER is a general disease, which affects all the nervous parts, and disturbs all the functions of the body; nor are the solids free from its dire effects: the motion of the heart and arteries cease to be regular and equal; the circulation of the blood to be free and natural; and secretions and excretions are no longer rightly performed. Horses may be attacked with this distemper at all ages, whether running at large in the fields, or kept close in the stable; and sometimes it is epidemical, seizing great numbers at the same time; sometimes it is symptomatical, as being the consequence of other diseases, at the same time rendering them more dangerous, and much more difficult to be cured.

The formal cause of a fever is an universal affection of the fibrous and nervous system, which begins at the spinal marrow, and is successively propagated from the external to the internal parts of the body. The

material cause may be any subtle, acrid, caustic matter, either generated in the body, or received by contagion; a stoppage of perspiration; a restraining of critical sweats: breaking out of the skin driven inwards; the healing of old purulent ulcers; an incongruous diet; corrupted bile lying in the first passages; want of due rest; violent tensions of the nervous parts; inflammations, tumours, abscesses, wounds, drastic purges; sudden cold after violent heat. These causes will produce a great variety of fevers in horses as well as men; but because in the former we can only discover the general symptoms, they cannot be reduced to the same classes as in the latter.

A fever, properly speaking, does not consist merely in an accelerated pulse, or a more frequent beating of the heart; because this may happen from hard riding, or any thing else that puts the blood and spirits into a commotion. That only can be called a fever which proceeds from internal causes, and is attended with coldness of the external parts. In men there is generally a shivering, and so there is probably in horses, though it is seldom or never taken notice of, because it can hardly be discovered till the disease is confirmed.

A fever has two motions: the one from the circumference to the centre, or from the external parts to the internals, the heart and lungs: on the contrary, the other is from the centre to the circumference. The first is attended with low symptoms, and the second with those that are violent. When a horse dies of a fever, it is always in its low state; because when the blood is driven inwardly by the spasms of the external parts, the heart, lungs, and brain are oppressed by its quantity, and not being able to return it back, they are greatly debilitated thereby. But the other motion, by which the blood is sent from the internal parts to the circumference through the small vessels, is salutary and vital; for then the matter which causes the fever is in time corrected, discussed, and thrown out of the body, so that at length the fever ceases.

Therefore since nature alone is often sufficient to throw off a fever, we must take care not to disturb her
salutary

salutary assistance when the disease tends to solution: for then no medicines should be given but such as are proper to assist the efforts of nature, in correcting, resolving, and at length expelling the morbid matter. This is best done by diluents, humectants, temperants, aperients, strengtheners, and nitrous medicines.

Of a SIMPLE FEVER.

A Simple fever is an accelerated motion of the blood, attended with other symptoms of a fever, while all the internal parts continue sound, and there is no inflammation or inflammatory tumour that may occasion it.

This is the mildest and least dangerous of all fevers, and is generally owing to a suppressed perspiration, which encreases the quantity of humours, and thereby requires an encreased effort of nature to throw them off, and to remove the obstructions; whence a feverish habit will follow, which, if taken in time, by assisting the endeavours of nature, it may go off without any bad consequences. There is nothing so likely to cause this fever as a sudden refrigeration of the body after it has been violently heated. The matter that should be carried off by perspiration is a recrement, and therefore when retained in the vessels, it cannot be friendly to the blood, but raise commotions therein, and that more or less as the horse is otherwise in health. This being the case, I was not a little surpris'd to find an increased perspiration to be assigned as a symptom of a simple fever by Mr. Gibson, especially as he is in general a very judicious writer.

The symptoms of a simple fever are, a loss of appetite, in such a manner, that the horse only nibbles his hay as if he did not like it, and he is so restless as to be continually ranging from one end of the rack to the other: he has a beating of his flanks, a redness of his eyes, and dryness of his tongue, which is somewhat parched; and his ears and feet are not cold, as in complicated fevers, but are almost as warm as the rest of his

his body: he is not collicive, but his dung by internal heat is dried into small balls, and is seldom or never greasy: his urine is of a high colour, and is sometimes voided with difficulty: he seems to be fond of water, yet drinks but a little at a time, and often.

In the cure of this fever which arises from too great a quantity and too rapid a motion of the blood, bleeding is certainly the first intention; and the longer it is neglected, the more viscid and acrimonious is the blood rendered, by dissipating its more thin part, condensing the globules, and heating the serum to such a degree as to turn it into a kind of jelly. The acrimony of the oleous and saline parts of the blood will be increased more and more, insomuch that the blood will be at length highly contaminated, and so far depraved as to be unfit for the vital purposes.

The quantity of blood to be taken away must be in proportion to the strength of the horse, the intenseness of the fever, the heat and the violence of the symptoms. Generally three pints or two quarts may be sufficient; and if the symptoms are not abated by the first bleeding, it shews a necessity of repeating the operation, especially if he refuses to feed. However it is safer to take away too little than too much.

When the horse is disposed to drink, it will be always proper to let him have a sufficient quantity to keep his blood well diluted; otherwise as the preternatural heat dissipates the thinner part, without a sufficient quantity of fluid, the serum of the blood will be concreted into a jelly. This should be made with warm milk and water mixt with a little oatmeal. He may likewise have the following drink or drench.

Take camomile flowers, elder flowers, hyssop and liquorice root, of each half an ounce; of saltpetre two ounces: pour two quarts of water on these ingredients, to make an infusion lik tea. It may be sweetened with sugar, or treacle, or honey, and make it a little tart with a spoonful or two of white wine vinegar, which will tend to allay the heat.

The horse may have three hornfuls of this drink four times a day warm.

His diet should be scalded bran to keep his body open, and he may be allowed half a quartern three or four times a day, if he will eat it. But if he refuses it, let him have raw bran sprinkled with water. He should never have much hay given him at a time, for that may cause him to lothe it; but now and then a handful of choice hay may tempt him to eat. Sometimes a horse will take a little hay out of the hand, when he does not care to lift his head up to the rack, especially if he has been used to be fed that way.

Besides bleeding and the nitrous cooling drink, it will be proper to inject cooling, emollient, and laxative glysters, even at the very beginning, to bring away the hardened dung which is frequently pent up in the intestines, and to discharge any bilious, acrid matter which might enter into the blood through the lacteals. Besides, they are a kind of relaxing fomentation to the bowels, and promote the excretion of urine.

Take mallows, marsh-mallows, both dried, camomile flowers, bay berries, and sweet fennel seeds, of each an ounce; boil them in a sufficient quantity of water to three pints, and then add four ounces of Epsom salt, a pint of linseed oil, and half a pound of treacle: mix them for a glyster.

Likewise laxative purges are very useful to cleanse the guts from the filth that lurks therein. But in this case purges with aloes must be omitted as being too hot; instead thereof, if four ounces of Epsom salt is dissolved in a sufficient quantity of water, and mixt with four ounces of the solutive syrup of roses, and given as a drench, nothing can be more safe or cooling; nor can there be any objection against it, because it is simple, for generally the simplest medicines are the best. And if these directions are carefully followed and observed, you need not fear the speedy cure of any fevers of this sort.

The signs of recovery are the horse's eating scalded bran, and picking a little hay, which when he does,
you

you will have nothing to do but to take care of him, and let him be well nursed, and then you will have no need of troubling him with any more medicines. For though a horse continue to heave at the flanks, this is no bad sign, especially if you find him cool all over with a return of his appetite. He should now be taken into the air every day, and be led about in the hand. He should likewise be allowed plenty of clean straw to lie down on, and then all your care is at an end.

Of INFLAMMATORY FEVERS.

BY inflammatory fevers in this place, I do not mean such as proceed from an inflammation of any particular part, or that keep equal pace with the inflammation itself, but such fevers as are apt to terminate in an inflammation of some particular part. This is an acute continual fever, which produces a congestion of the blood, in the nervoso-membranous parts; and unless it is removed in time, by the benefit of nature and art, will bring on a fatal inflammation.

This disease chiefly attacks horses that are young and full of blood, at any time of the year, but principally in the spring and summer. It only differs from the former by the violence of the symptoms, and a greater degree of heat. When its progress is not stopt, it often seizes the head, or some of the noble viscera, as has appeared by opening of the horses after death.

The indications of cure, are to free the vital parts from the congested blood; to abate the heat of the blood and humours, to allay the inordinate motion of the solids; to discuss the stagnating and corrupted humours, and procure a free circulation, by recalling the blood to the external parts.

Therefore we must begin the cure, by taking away a sufficient quantity of blood. The impetuous organin of the blood and juices must be allayed by diluting and cooling and nitrous liquors; therefore the drink in the former section will be very proper, made sufficiently acid with good white wine vinegar. Or, in the coun-

try,

try, where a sufficient quantity of whey can be had, he may have whey made acid with syrup of lemon juice, or with the juice of a lemon, and sweetened with a little sugar: or, instead of these, he may have the following infusion;

Take the leaves of male speedwel, carduus benedictus, sweet fennel seeds, water Germander, and saltpetre, of each two ounces: pour two quarts of water on these ingredients, and when the infusion is cold, strain off the liquor; then make it agreeably acid with vinegar, and sweeten it with sugar, honey, or treacle; make this warm when you give it the horse. He may have three hornfulls four times a day.

The horse's body should be kept open with emollient glysters, for there is nothing worse than costiveness in all distempers of this kind. On all other accounts, he may be treated in the same manner as in the former section.

Take the dried leaves of mallows and marsh-mallows, of each two ounces; camomile flowers, and sweet fennel seeds, of each an ounce; of water five pints; boil them to the consumption of a pint; then strain off the liquor, and dissolve in it half an ounce of salt-petre, and a handful of common salt. This done, pour in a pint of linseed oil, and mix them for a glyster, to be injected warm.

Of the PLEURISY and INFLAMMATIONS of the LUNGS.

A Pleurisy and peripneumony are inflammatory fevers which arise from the stagnation of the blood in the bronchia of the lungs, or in the branches of the *vena sine pari* in the *pleura*. They are attended with a sharp pain in the side, difficult breathing, immoderate heat, a strong quick beating of the heart, and a cough. The pleurisy generally seizes one side only; but the peripneumony or inflammation of the lungs, generally seizes both sides of the lungs at once.

The

The cause may be any thing that impedes the free circulation of the blood through these parts, either by plenty of thick humours, or by thin acrid humours, which irritate the vessels to a spastic contraction, and so hinder the free passage of the blood; especially when the antecedent causes conspire to produce the same effect. Therefore it may be owing to bad or high feeding, want of exercise, being over-heated, hard labour, sudden cold, drinking cold water when hot, want of bleeding when the body is full of blood and humours. Riding a horse deep in cold water when he is hot; or letting him stand long in a cold damp air, or when there is a very cold wind then blowing; for all these have a tendency to render the blood and humours of that consistence, as is generally termed a pleuritic blood.

The symptoms of a pleurisy and peripneumony are much the same, only in the former, the horse is more restless and uneasy, and shifts about from place to place, and frequently turns his head to the affected side. The fever rises suddenly to a very great height in the beginning of this disease, and he often strives to lie down, but starts up again immediately. His ears and feet are burning hot, and his mouth parched and dry. As the disease advances, he does not offer to lie down at all, but runs back as far as the collar will let him, and then stands immoveable, panting, or endeavouring to cough, till he drops down dead.

This disease, at its first onset, has been frequently mistaken for the gripes, but may be readily distinguished from them; for in the gripes, the horse lies down and rolls, with his eyes turned up and his limbs stretched out as if he was dying, with convulsive twitches. His ears and feet are not constantly hot, but are sometimes almost as hot as fire, and at other times as cold as ice. Likewise he sometimes falls into profuse warm sweats, and then into cold damps; he stales and dungs with great difficulty, and the same symptoms continue till he finds relief.

In an *Inflammation of the lungs*, the horse is more dull and heavy, and never attempts to lie down at all; when
his

his mouth is opened, a great quantity of roapy slime will fall therefrom; and a reddish or yellow matter sticks to the inside of his nostrils, from a gleet that runs from thence. There is no extraordinary beating in his flanks, nor is his belly tucked up as in the pleurisy. His ears and feet are generally cold, and he often falls into damp sweats.

The cure of both these diseases is much the same, the intention of which, is to remove the stagnation of the blood, and to promote its equal circulation. In order to this, we must endeavour to prevent the farther congestion of the blood, and to render it, more fluid. There is nothing more proper to prevent the farther inflammation, than letting of blood as soon as possible, and to take away three quarts at once, and if there is no great alleviation of the symptoms, two quarts the next day, unless they continue violent, and then bleeding may be repeated sooner. But if the horse was low before he fell ill, or was pretty old, then take away a quart at once, and repeat it in twelve hours time, and then the next day, if the case requires it. This operation when used in time, has often removed the disease of itself.

The next thing to be done is, to rub the blistering ointment, to be had at the apothecaries, all over his brisket, into the foremost ribs, and when it is a pleurisy, into the pained side more particularly. Rowels also will be of great service when they digest in time. Therefore he may have one in the belly on the affected side, and one on each side the breast: but if he has a great motion of the flanks, that on the side will not come to digestion, and then it will be best to make one on each thigh on the inside.

It will be likewise necessary to keep the body open with emollient glysters.

Take of thin water gruel two quarts; of camomile flowers four ounces: boil them a little, and strain off the liquor; then add of sallad oil, or linseed oil, half a pint; of common salt an ounce; of saltpetre half an ounce; make a glyster to be injected warm.

Oil

Oily, balsamic medicines, given inwardly, are of great use, such as the following ball and drink.

Take of oil of sweet almonds, or linseed oil, two ounces; of spermaceti an ounce; of saffron half a dram; of saltpetre half an ounce; of sugar-candy four ounces. Beat them into a paste for balls, with a sufficient quantity of wheat flour; and make the balls of such a size, as will be most convenient for the horse to swallow in his present condition. This is for one dose. Then

Take male speedwel, colts-foot, sage, liquorice, of each two ounces; of fennel seeds an ounce and a half. Pour two quarts of hot water upon them, and let the infusion stand till it is cold; then sweeten it with honey. It must be warm when given to the horse.

These balls may be given him twice or thrice a day, with three or four hornfuls of the pectoral infusion. Some add half a pound of figs, two ounces of garlick, half an ounce of assa fœtida, and the same quantity of horse radish. As also two drams of saffron, a pint of linseed oil, and a pound of honey. But the balls are so contrived, as to render these additions unnecessary except the figs; and when these are added, they must be boiled in the water some time to render them mucilaginous. *Gibson* orders two drams of sugar of lead in his balls, I suppose to render it more cooling, but very injudiciously; for there is nothing more pernicious than sugar of lead taken inwardly; for it is not only bad for the nerves, but would render a horse costive, and, and by locking up the humours, tend to increase instead of abating the inflammation.

When the glyster does not prove cleansing enough, but a farther evacuation is required, you may add four ounces of Epsom salts. As for purges, they must be entirely omitted in these diseases. Besides, all drastic purgative ingredients are of dangerous consequence even in glysters.

The glyster may be repeated every day, or, if the symptoms are abated, every other day; and when he comes to eat scalded bran, and pick his hay, you need only

only give him the pectoral infusion, with four ounces of linseed oil in every dose. He should have four ounces of it once a day, till he is fit to walk abroad ; and always remember to keep his body open, for that is a thing that must never be neglected, even when he is almost well, if he should seem to want it.

His exercise should be little at first, even when he seems able to undergo more ; and it should be increased by little and little. It should be performed in the warmest part of the day, unless in the height of summer, and on the highest, openest place that is near you. He should never be taken out of the stable in bad weather, till he is quite recovered.

After the disease is cured, the lungs will be sometimes so affected as to endanger a consumption, and there we must take as much care as we can to prevent it. Therefore the best way will be to keep the horse to light diet for a fortnight, or three weeks : that is, give him a quartern of scalded bran every day, with two or three small feeds of good sweet oats, sprinkled with chamber lye. Sometimes put a large spoonful of flour of brimstone and honey into his bran, which is very good for the lungs ; and for change, let him have a quart of barley well scalded, so as to make it soft.

When the horse in this disease is not timely relieved, the inflammation will turn to an abscess ; and if it breaks internally, he will grow weak, and decay insensibly. However, sometimes the matter of this abscess will be translated to some other part. Particularly, it has formed an abscess on the inside of the fore-leg, a little above the knee, between the interstices of the muscles, and sometimes near the onset of the shoulder on the inside. But this is most common when there is an external pleurisy : that is, an inflammation of the intercostal muscles : this is the flesh that lies between the ribs.

This may be known by a stiffness of the body, shoulders, and fore-legs ; especially from his shrinking when those parts are handled ; and sometimes there is a short cough at the beginning. This may be carried off by bleed.

bleeding alone: but if the pectoral infusion be added, it will not be amiss. When an abscess is formed in these muscles, and points outwardly, you must forward it by anointing the part with ointment of marth-mallows. Great care must be taken not to drive the humour back by repellents, and then no danger will ensue. On the other hand, this is sometimes critical, and may free the body from dangerous diseases.

Sometimes the midriff may be inflamed; but it is doubtful whether it ever happen alone, without the inflammation of the adjacent parts. But let that be as it will, the cure will be the same as in the pleurisy. One principal sign is said to be a *delirium*, which is true in men, but how it is discoverable in horses, otherwise than by their becoming unruly, I am at a loss to know. Sometimes the horse's mouth is shut up in such a manner, that neither meat nor medicine can enter that way; but then it is a fatal symptom, and a fore-runner of death.

Of Low, PUTRID, and MALIGNANT FEVERS.

A Low, putrid, and malignant fever seldom rises to that degree of heat which attends inflammatory fevers, but creeps on gradually, while nature endeavours to get rid of her enemy, sometimes by one outlet, and sometimes by another; insomuch, that we are not able to determine which of the secretions to promote, and this renders the method of cure very precarious and uncertain. These sorts of fevers have been often mistaken for severe colds, which has produced fatal errors. And to say the truth, it requires the highest skill in farriery, to manage these diseases in a due manner, and to prevent their ending in a consumption.

All kinds of irregularities, either in diet, rest, exercise or labour, when long continued, may produce these fevers, because they all tend to generate bad juices, deprave the blood, and depress the spirits, and therefore the only way to prevent them, is to keep the horse from
 excesses

excesses of all kinds ; for what tends to preserve his due temperament, is the most likely method to preserve him from diseases in general, and this kind of fever in particular.

When this fever begins to appear, the horse feeds but little, eating a mouthful or two, and then leaving off ; he has a constant moisture in his mouth, moves his jaws in a feeble manner, and has an unpleasing grating of his teeth. He has a slow fever, attended with a depression of the spirits, which is at some times more remarkable than at others ; his heat is variable ; sometimes there is none appears outwardly, but rather a remarkable coldness ; at other times he will be hot all over, but not to any great degree. His eyes are generally moist and languid, his body is open, his dung soft and moist, but seldom greasy. His staling is generally irregular, sometimes very profuse, and at others very little. His urine is generally pale, without a sediment, and very seldom high coloured.

With regard to prognostics, if the fever sensibly abates, and his mouth grows more dry, the grating of his teeth ceasing at the same time ; if his appetite mends by degrees ; if he begins to lie down, which at first he seldom does, for a week or a fortnight or longer, there is no doubt of his recovery, unless through bad management.

But if his appetite is constantly upon the decline, and goes off gradually, till at length he forsakes all manner of food, while his fever continues at a stand, or increases ; if the horse is old, with poor vapid blood, or has lately met with any severe accident, there is little good to be expected, unless by the consummate skill of the person who takes care of him. While the disease continues in a moderate degree, he will feed, tho' but poorly ; his urine will be pale and thin, without any sediment ; his dung will be sometimes loose, and sometimes hard ; his mouth will continue moist, with a redness and spunginess about the roots of his teeth ; his skin will sometimes feel dry, and sometimes moist and damp, with a roughness of his coat. While the horse
remains

remains in this state, the exhibition of proper medicines will in all probability work a cure.

The cure of this disease may be begun by bleeding; but the quantity of blood to be taken away must be regulated according to the symptoms. When the horse is plethoric, and there is a redundancy of blood and humours, you may take away two quarts at least, and ~~that~~ as soon as possible: if the horse is in a moderate condition, a quart or three pints will be sufficient: but when he is old, poor, and low, it will be dangerous to take away any at all. In general, when there is any symptom of an inflammation, then it is necessary the horse should lose blood, let his condition be what it will. This done give him a pint of the following infusion twice a day.

Take water germander, pennyroyal, and rue, of each an ounce; camomile flowers, and galangals bruised in a mortar, of each half an ounce; of saffron the same quantity. Put these in an earthen pan, and pour two quarts of boiling water upon them, and then cover the pan with a pewter plate, and when the infusion is cold, pour it off into another vessel.

As this fever is attended with a depression of the spirits, I have added a dram of saffron to the infusion more than usual, for cordials are very good to enable the horse to support the violence of the disease, and dispose him to send off the morbid matter by some outlet of the body. One dose must be given in the morning fasting, and about two hours before feeding in the afternoon. If wine is ever allowed a horse, it should be in this distemper, especially if he is low and sinking. Then half a pint of mountain mixt with each dose of his drink will help to mend his stomach, raise his spirits, and strengthen the whole nervous system. The greatest danger in this distemper is the supposing the horse to ail little or nothing, till he is too far gone for a cure, because he will keep picking and eating his hay during the first stage of his disease. Afterwards, if he is allowed oats, he will eat nothing else till his stomach quite forsakes him. Therefore, if his disease

disease is known in time, instead of oats he should have scalded bran ; and if he refuses to eat it scalded, he should have a little raw sprinkled with clean water, with some fine hay put into his rack by a handful at a time. But if he is neither able or willing to lift his head to the rack, it may be given by hand, which may tempt him to eat, especially if he has been used to be fed that way.

As a horse in this disease seldom drinks so much as he does in a healthy state ; and as it is impossible he should recover, if he does not swallow enough to dilute the blood and promote the secretions, if he will not drink warm water or water-gruel, it will be best to indulge him with cold, let the season of the year be what it will ; especially as no bad effects have been perceived from it, but on the contrary it has tended to refresh him, and render him more lively and active, as well as to mend his stomach, and make him more fond of hay. We cannot say that water dissolves the coagulated blood, and renders it more fit for an equable circulation, because in some fevers it cannot be brought to mix with the blood ; but we are certain that unless the horse drinks water enough to assist the operation of other medicines, they can have little or no effect. When the fever is low and depressed, it may proceed from the poverty of the blood, and may be easily guessed at from the state of his body before he fell ill ; for if he was poorly fed, or in a bad pasture, or has been greatly harassed by hard labour or long journeys, or is much advanced in years, then his blood will be poor and low, and will produce a fever much of the same nature as the nervous fever in men. In this case bleeding must be omitted, and he should have cordials, such as half a cordial ball, or less, four or five times a day, for the giving such things often in small quantities will keep up his spirits much better than full or large doses at once. Not forgetting two or three horns of the infusion to wash it down every time.

When the fever is evident, and still continues, with little appetite, Raling often, and the urine continues

to be pale, and the dung sometimes loose and sometimes hard, with a very moist mouth, and a skin that is sometimes dry and sometimes damp, then he must have something of a more cordial nature; thus,

Take powder of myrrh, bay-berries, round birthwort, gentian root, and Virginia snake root, of each half an ounce; of saffron two drams; mithridate and liquorice powder, of each an ounce; of oil of amber a sufficient quantity to make them into paste for balls, which divide into four; one of which is to be given every morning, and another in the afternoon two hours before feeding time, with three or four horns of the infusion.

In this case it will be proper to strengthen the infusion with half an ounce of Virginia snake-root, and an ounce of tincture of castor: this last is much better than two drams of castor in substance, as *Gibson* prescribes, for a watery menstruum will take up little or nothing of the virtues of the castor. This done, add a pint of mountain to the whole, and then divide it into four parts, for two days; and then let it be made fresh again. These may be continued six or seven days, or till the fever abates. Or,

Take myrrh, bay-berries, contrayerva root, Virginia snake-root and castor, of each an ounce; saffron and camphire, of each three drams; of powder of liquorice two ounces; make them into a paste with oil of amber for four balls, to be given as before.

Take the leaves of angelica, water germander and rue, of each an ounce; camomile flowers and gentian, of each half an ounce; saffron and salt of wormwood, of each two drams: put them into an earthen pan, and pour two quarts of boiling water thereon, and when it is cold pour off the infusion, and then add a pint of mountain wine, to be given after the ball, as the former.

When the horse has so far recovered his strength that he is fit to be taken out of the stable, lead him into the
open

open air, which will contribute greatly to his speedy recovery.

Costiveness is bad in all diseases, but more particularly those of the head, and fevers; and therefore whenever you find the horse in this condition, you must have recourse to some one of the emollient glysters before prescribed. If this should prove insufficient, as it seldom does, you may put four ounces of Epsom salt into one of his drenches, which will have a good effect without raising commotions in the blood. If on the contrary a looseness should happen, it is often critical, and therefore should not be stopt immediately. But if it turns to a down-right looseness, you must have recourse to the medicines under that title.

When a horse pisses too much, let all his drink be made with lime-water instead of common water, which will generally succeed. On the contrary, if he stales too little, give him the following ball.

Take juniper berries pounded, Venice treacle, and hoglice, of each an ounce; make them up into a ball with oil of amber.

Gibson prescribes an ounce of saltpetre instead of the hoglice, but that is too cold in this disease, and may do a great deal more harm than good. When his legs and body begin to swell, this must be repeated three or four times at proper intervals, with a pint of the decoction of parsley root or fennel root in spring water. It is made with three ounces of the roots to three pints of water, boiling them so that a quart of the liquor may remain when strained, and sweeten it with six ounces of honey. Take care to leave it off as soon as the symptoms cease.

When besides the symptoms already mentioned, the horse has cold fits, attended with trembling, an inward soreness, a running at the nose and eyes, with a very great heaviness and oppression, these are signs of greater malignity, and that the blood and humours are in a high putrid state, which creates a stagnation in the capillary tubes, a coagulation of the fluids, and which will be followed with their extravasation from a rupture of the vessels. If this should happen in the skin and turn to

scabby corruptions, it denotes the change of the disease from acute to chronic ; but when it happens internally, which can only be known by guess, a lingering death will ensue.

In this case there can be nothing better for a horse than camphire, which has been already prescribed, and which with contrayerva, snake-root, and castor, will be excellent in this degree of the disease. But then the doses should be larger ; and instead of dividing the mass into four balls, it is better to make it into three. The drink needs no amendment, for it cannot be detrimental whatever symptoms appear, and may do a great deal of good ; nor have we any reason to despair of recovery by these means.

But in this degree of the disease it ought to be remembered, that there is always an ichorous discoloured matter, which sometimes looks reddish, or of a dusky green : it is of a very clammy viscid nature, and will stick to the inside of the nostrils. Now if this matter becomes thin, and has the appearance of clear water, and when the horse falls away at the same time without being hide-bound, it is a certain sign that he will recover, and then you need only continue the medicines a few days longer.

But if the matter continues to stick to the inside of the nostrils, and he seems to blow through them with difficulty, at the same time snivelling and sneezing, we shall have great reason to apprehend the consequence, and there can be no hopes but in the speedy use of the things above prescribed. If besides these symptoms the horse becomes hide-bound, keeps his flesh, forsakes his meat, and grows more weak and feeble ; if his joints swell, and the kernels under his jaws are tumid and feel loose ; if his breath smells strong ; if his tail is raised and quivers ; if his eyes look fixt and dead ; if his excrements are a fetid, dark-coloured matter, his case is desperate, and any further charge will be lost upon him : nor is it worth while to make any farther attempt to save him, it being altogether beyond the power of medicine.

The signs of recovery are, when the skin of the horse feels kindly, and not hide bound, though he has fallen away ; his eyes begin to look brisk and lively ; his appetite grows better ; the running of his nose ceases and becomes quite dry ; his excrements and urine are both voided in the same manner as before he was taken ill ; he lies down and takes his rest without any uneasiness : if he happens to have breakings out on his skin at this time, it is no bad symptom, but on the contrary may prove very beneficial. Now medicines are of no further use, and the completion of the cure depends upon due care and management which consist in supplying him with suitable diet and convenient exercise. We may well suppose that every tedious distemper weakens the digestive faculties, and consequently that a horse is not able of a sudden to concoct the same quantity of meat as before he was ill ; consequently it must be very imprudent to allow him as large feeds now when he is weak as were given him when he was well. I know the design of it is to bring him to his flesh, and strengthen the sooner ; but this is a great mistake, and is like to cause the disease to return ; for though a horse's stomach is craving, and he seems greedy of food, yet as he will not be able to digest it, so as to enlarge the quantity of good chyle, he must necessarily generate crudities, which may cause a relapse, or at least throw him into a surfeit, which may prove as bad. Hence the necessity appears of feeding sparingly at first, and of giving him provender by little and little, in proportion to his strength. He should be likewise aired every day ; for fresh air is as necessary to restore all the functions as a convenient repast, as is evident to all who know what a speedy effect the change of air has on the human species for the recovery of their health. And then gentle exercise, encreased by degrees will bring him to his wind and his flesh : and this is done by promoting a due distribution of the chyle, and a regular circulation of the fluids.

Of CONTAGIOUS DISTEMPERS and EPIDEMICAL FEVERS.

EPIDEMICAL distempers are allowed on all hands to proceed from the air, or rather from deleterious particles contained therein. These may be of a fermentative, putrid, or caustic nature. Such particles may proceed from corrupt stagnating water, which exhale therefrom and float in the air; for all waters without motion will soon turn putrid by the heat of the sun, and send off noxious effluvia. Thus all water, though at first never so pure, and at a distance from any thing that may hurt it, is so full of sulphureous and earthy particles acquired from the earth, that by rest and the heat of the sun it will soon grow musty and fetid, as we may see in all marshy places.

The effluvia of marshy and corrupted waters, being elevated into the air, generate fevers of the worst kind; for which reason they often attend the overflowing of the waters or land-floods. Thus we see that no nation in the world is more afflicted with epidemical diseases than Egypt, which is owing to the overflowing of the Nile: and it has been found by experience, that unless the flood is much greater than usual, so as to lay the whole country under water, the plague never appears among the inhabitants: for in this case, as the country becomes one continual marsh, and is subject to south winds at that time, with a violent heat of the sun, the putrid exhalations fill the air, and create severe pestilential diseases: and what makes this more plain is, that the most violent heats alone never produce the plague. At Alexandria the people are always troubled with bad fevers in the autumnal season, because they let in the waters of the Nile into cisterns under their houses, which growing corrupt and putrid constantly produce these diseases.

We may likewise observe in our own country, that great land-floods often create acute epidemical diseases of a malignant kind. For the same reason, long rainy seasons, accompanied with a south wind, are very unwholesom,

wholesom, especially if these are succeeded by a great heat at first, and cold weather afterwards; and if this happens in the spring or autumn it is the worse. Perhaps stagnating waters would not have such terrible effects alone, if they did not produce such a prodigious quantity of pernicious insects at the same time, which were always looked upon as the cause and forerunners of epidemical diseases.

The air being an universal menstruum, by its expansive elastic force, and by its hot ethereal matter dissolves the more subtil parts of all bodies, which producing exhalations of various kinds, do, by their mutual conflict, combination and mixture, and also by the assistance of the sun, put on various forms and textures. Thus the air is always full of saline, sulphureous particles, as well as nitre, which is an inflammable elastic salt; and therefore it is no wonder, that those, being mixt with the different exhalations which proceed from the earth, in different seasons of the year, and according to the different operations of the sun and winds, should produce various concretions, which being received into the bodies of animals, should cause different kinds of epidemical distempers, which are only to be known by their symptoms, and not by any preceding disposition of the air or weather. However we are certain that they chiefly produce their effects in the evening and in the night, when the vapours are condensed by the cold and moisture, and so descend nearer the earth. Hence we find that dews, mists and fogs are not only pernicious to animals, but to the fruits of the earth. The terrible effects which mildews produce in plants, herbs, and trees, is but too well known to every farmer. Besides, the damage they do the fruits of the earth is not all, for animals that feed upon them are often afflicted with various diseases.

The air does not only abound with deleterious effluvia, but with animalcules, especially in the night, which are sucked into the body by the breath. This chiefly happens near stagnating waters and marshy grounds; for these places are the seminaries of such sorts

of insects. Their prodigious smallness must be evident to all those who have made use of a microscope properly. Lewenhoeck affirms that many hundreds of these are not equal to a grain of sand, and therefore it is no wonder the eggs should be carried about in the air. That this is the case is plain from the dews which fall upon the fruits, herbs and plants, from whence a great number of small insects and worms arise, as is well known to gardeners and husbandmen: and also that when quadrupedes feed upon these infected vegetables they either fall sick or die immediately. Therefore since the sorts of dews are so pernicious, it would be well if horses were sheltered in the night from these dangerous accidents at some seasons of the year. For it is well known, that if the inhabitants of Rome happen to sleep out of the city in the night time, they are often seized with grievous symptoms, and many of them die, which is owing to the vast number of insects wherewith the Roman air is infected, and which fall down with the nocturnal dews.

Though what has been hitherto premised may be thought principally to relate to mankind, yet we may safely conclude that all quadrupedes are concerned more or less, I mean those that feed upon vegetables; for whenever the grass is contaminated with insects or otherwise, they are most likely to share immediately in their dangerous effects. And perhaps if this reasoning was more carefully attended to, we should be able to give a better account of epidemical diseases among sheep, horned cattle, and horses, than has been hitherto done: for horses as well as men are often subject to epidemical fevers from such causes as these, which become infectious, and approach nearly to the pestilential kind. Hence, in turning over the chronological histories of our own country, we shall often meet with diseases that are there called a murrain, which have swept away a vast number of horses, like a real plague. However, there are many epidemical diseases of a very slight nature, which seize great numbers at once, and pass off without the assistance of medicine.

The

The worst fevers of this kind which we meet with at present, begin with a seeming stupidity, swelling of the eyes, eyelids, and the kernels near the ears and throat, with a plentiful running from the nostrils, which is of a dusky colour: the same kind of matter is also voided by the mouth, of a disagreeable stinking smell. The limbs and particularly the joints, are affected with sudden, large swellings, which are often attended with the staggers, resembling an apoplexy. This distemper happens very seldom, but when it does, it is to be treated, as in the former section, with Virginian snake-root, contrayerva root, camphire, mithridate, castor, &c.

The distempers we ofteneft meet with, are epidemical colds, which attack great numbers at once, and which are attended with swellings in the glands under the ears, and about the throat, which are more considerable than the common disease called by that name. This is to be cured in the same manner as other colds, only we must take a particular care to cover the head and neck, and to keep them warm. They commonly run prodigiously at the nose in two or three days time, which continues for five or six days; but though this makes them fall away greatly, yet if it is of a good colour and consistence, it is attended with no danger. As this is a catching distemper, it will be best, as soon as one horse is infected, to remove those near him to another place. Bleeding in such disorders as these yields the speediest relief, and then such pectoral medicines as are given in a common cold, with a diet of scalded bran and hay. Sometimes half a pint of white wine will be proper, with three ounces of oximel of squills to promote expectoration.

Of the STRANGLES.

THE strangles is a disease that attacks young horses, chiefly before six years of age; though some are affected with it beyond that term, however they never have it but once. It is somewhat analogous to the quinsy in men, and generally forms an abscess, which breaking, discharges a humour, and renders the horse more healthful afterwards.

It is a swelling under the throat between the jaw bones, and its principal seat appears to be the muscles of the tongue, wherein there is an inflammation, and therefore it seems to differ from a quinsy in the seat of the distemper only. We scarce need to observe that an inflammation is always attended with pain, which, while it lasts, renders swallowing very difficult.

The cause of the strangles, like the small-pox, seems to lurk in the blood of a horse, which at certain times it will throw out and get rid of; hence many colts have them at grass, and get over the distemper only by the benefit of nature, without any help from art; for the tumour breaking discharges a great quantity of matter, and then the ulcer heals of itself, and so puts an end to the disease.

When a horse is seized with it in the stable, you may perceive that it is coming on, by an unusual heat, as though he was going to have a fever, with a cough that discovers the horse to be in pain. Some, notwithstanding the pain, will eat and swallow a little, though with difficulty, while others will lose their appetite intirely; at this time a swelling begins to appear, which sometimes is on the inside of the jaw-bone, sometimes under the tongue, and sometimes in the upper part of the throat, about larynx and pharynx, or the head of the wind-pipe and gullet, which makes him breathe with difficulty, occasions his nostrils to turn outwardly, and his eyes to look as if they were fixt in
his

his head. When it is the worst kind the nose runs at the same time, and then it is called the *bastard-strangles*..

With regard to the prognostics, when the swelling begins on the inside of the jaw bone, it shows it will be a long time before it grows ripe or imposthumate. When it rises between the jaw bones in the middle under the tongue, it is a sign the disease will be mild, and of no dangerous consequence ; when the skin that lies over the tumour is stiff, distended and tight, feeling hot and dry, a large swelling is portended, which will yield a plentiful discharge when it breaks. When it rises to the glands, and is, as it were, divided into knots, it is a sign that the disease will be long and tedious, because the tumours will break in several places, and at different times. When it lies at the head of the gullet or windpipe, the horse will not be able to swallow for several days, till the swelling descends more to the outward parts : but when he has a purulent running at the nose, it portends great danger, and shows it is complicated with some other disease which lies lurking in the blood ; but if it goes off as the tumour ripens, the horse may do well.

The cure requires no great skill, because all that we have to do is, to promote the breaking of the swelling, which may be done by anointing it often with the ointment of marsh-mallows, so as never to suffer the skin to become dry. This commonly happens in five or six days time : and as nature is always very indulgent in the cure of this disease, we have nothing to do but to lend her a little assistance, that it may be sooner brought to perfection. And, indeed, in all other cases, the tendency of nature should be carefully observed ; for the skill of all practitioners consists chiefly in the forwarding her motions. Some in this case make use of cataplasms or poultices, but then they must be such as are not apt to turn dry, and that will stick close to the part affected ; otherwise they will repel the humours, which may be of dangerous consequence to the eyes and lungs

Bleeding, which in all other inflammations, is of great consequence to retard the progress, will produce bad effects in this, because it may recal the peccant matter back into the blood, and thereby prevent the breaking of the tumour, and keep the enemy in the body, which ought to be expelled out of it. Some who are never easy, unless they are doing something, will often open the swelling before it is ripe; not considering that this practice prevents the due discharge of the matter, which is always most plentiful when it comes to a head of its own accord, and will always be cleansed, and heal the sooner and better. Besides, when an incision hinders the carrying off of the humour by the usual outlet, nature will attempt some other way, commonly by a running of the nose, which may have fatal consequences; while, at the same time, the wound itself turns to a malignant ulcer, with hard callous lips, and with a continual gleeing, which of itself would give a great deal of trouble in the cure. When the tumour breaks of itself, some think it necessary to make the orifice wider, by putting in a sponge tent; but this is altogether superfluous, because there is always room for running off the matter, without any operation of that kind. However, when the horse has fallen into bad hands, and improper applications have been used, so as to drive any part of the humour back, then enlarging the orifice may not be amiss.

Bleeding, as we observed above, when this disease is genuine, is always unnecessary, and commonly dangerous; but when it appears with uncommon symptoms, such as a swelling of the neck about the onset, stiff jaws, and the nostrils turned outward, which are signs of a dangerous inflammation; then we may venture upon taking away blood to stop its progress. We should likewise anoint the parts well with the ointment of marsh-mallows, never suffering them to become dry, and cover them with a thin woollen cloth first, and afterwards with a warm hood.

Sometimes the inflammation is so great, as to corrode and eat away the skin that contains the matter, in such
a manner

a manner as to occasion it to fall off in pieces, and to lay open the spaces between the muscles, and to uncover the adjacent glands or kernels; but this symptom, as alarming as it seems, is not at all dangerous; for the skin and hair will come again as perfect as at first, without any other assistance than what has already been recommended.

In some cases when the swelling is small, the horse seems to be little effected with the disorder, and eats and drinks as usual. In this case the tumour will be some time before it grows ripe and breaks, but as this will happen in due time, I should think it cruel to burn the skin of the part with a torch, to make it crack, or to open it with a red hot iron, since, if we have but patience, the horse will do very well without those instruments of barbarity.

Sometimes the swelling is more inwardly, and will break into the mouth, without any dangerous accident; in this case we have nothing to do but to keep the horse's mouth sweet, by washing it with some antiseptic fluid. White wine vinegar, sweetened with honey, will be sufficient for this purpose; or it may be mixt with an equal quantity of spirit of wine, and sweetened as before. By this means the outward swelling will disappear in due time: but then the horse should have soft feeds of scalded bran, in this as well as all other kinds of this distemper, and his drink should be water gruel, given him very freely, because, if the blood is not properly diluted, the disease will not come so soon to a happy issue.

When this disease is attended with a fever, which shows any signs of malignity, it will be proper to give him a drink to alleviate the symptoms.

Take water germander, pennyroyal and rue, of each an ounce; camomile flowers and bay-berries, of each half an ounce; of saffron, a dram. Pour a quart of boiling water upon them, let them stand twelve hours, and then pour off the infusion, which is for one dose: sweeten it with a little honey, and give it him in the morning.

This

This may be repeated at the same time of the day, till the tumour is ripe, and then medicines of every kind will be unnecessary.

When the horse has a running at the nose, and the tumour has little or no inflammation, but on the contrary is cold, and shews no signs of suppuration, then it will be proper to open it with an actual cautery, which by making an ulcer in the part, may probably drain off the humour, and cause the running at the nose to cease. But if it has not this effect, the case will still remain dangerous. However, it may be possible to dry up this humour by proper decoctions repeated every morning. Boil two ounces of the greater burdock root, in three pints of water to a quart: this is for one dose; or take the shavings of guaiacum wood and sassafras, boil them in the same quantity of water as before. *Gibson* advises an ounce of the powder of the bark in a pint of red wine, which is to be repeated three or four times, but I confess I cannot see what good effect the bark can have in this distemper. But as for the decoctions, they have been found often beneficial.

Of the IVES or VIVES.

THE Ives is a distemper seated in the glands and kernels under the ears of a horse, and hath some affinity to the strangles. At first these glands are slightly inflamed, and then swell, but seldom or never come to a suppuration. It seems to me to be rather a symptom of a disease than a disease itself, because it is attended with a cough, and a difficulty of swallowing. Sometimes a horse is so sore, he can scarce bear touching about the neck and throat. Sometimes his eyes are watry and tender. It is generally attended with a fever, and if he is shedding his teeth, there is a redness and swelling of the gums. If a lampass supervenes to this, it is commonly very large, and reaches beyond the edges of the upper teeth. When the ives attacks bad horses, it is generally of a bad kind.

The cure must be begun by bleeding and anointing the swelled parts with ointment of marsh-mallows; the head and neck must be well covered, and if the fever continues,

continues, the bleeding must be repeated in a day or two ; but there must not be so much blood taken away as at first. Sometimes this disease turns to the strangles, and then it must be treated in the same manner. The frequent rubbing in of the ointment has a double effect ; for it not only eases the pain, but the friction has a great tendency to remove the tumour.

When the swellings are obstinate, and will neither disperse nor come to a suppuration, we must have recourse to mercurial ointments.

Take of hog's-lard a pound ; of quicksilver three ounces ; of common turpentine a quarter of an ounce ; rub the quicksilver and the turpentine in a mortar together, till the quicksilver disappears ; then warm the lard and mix them together by little and little.

If this is too weak to effect the cure, the ointment must have more quicksilver. Thus,

Take hog's-lard a pound ; of quicksilver half a pound ; of balsam of sulphur half an ounce ; rub the quicksilver till it disappears, and then warm the hog's-lard, and mix them well together by little and little.

Some of either of these should be rub'd well in every day, or rather every other day for fear of a salivation. Some recommend oil of bays instead of hog's-lard as more proper for the swelling ; but as to this, you may use your pleasure. If the horse has no fever, it will be proper to give him an aloetic purge or two while he is anointed ; but if he be feverish, which you may know by feeling his heart, glysters will be safer and better, of which you may choose one out of those elsewhere prescribed. When a horse's heart beats much above forty times in a minute, you may conclude he has a fever.

Take of aloes an ounce and a quarter ; Gum Guaiacum and ginger, of each half an ounce ; saffron and oil of anniseed, of each half a dram ; of honey, enough to make them into a purging ball.

His diet should be scalded bran, and water gruel. When his cough is bad, you may mix two ounces of flour of brimstone, incorporated with honey, to the bran ; and if he is hot and feverish, it will be proper to add an ounce of saltpetre once a day.

Parkinson,

Parkinson, and many others since his time, have had a great opinion of the flowers of fox glove for the dispersing these kinds of tumours, and even for the king's evil in mankind. They beat the flowers with fresh butter, or hog's-lard, till they are well mixt, and so make an ointment, which must be rub'd into the swelling several times a day. Some let this ointment stand a fortnight, then boil it and strain it for use.

Of OBSTINATE COUGHS, the ASTHMA, and a BROKEN-WIND.

THERE is scarce any disease so common and so complicated with other disorders as a cough. It may be defined to be the effort of nature, to expel any foreign matter from the bronchia of the lungs, by their contractile force, greatly increased, with a more violent expiration.

But for the better explanation of its nature, it will be necessary to say something of the construction of the parts by which it is performed: the principal of these is the aerial canal or wind-pipe, by the help of which we fetch our breath. It is divided into the *aspera arteria*, or wind-pipe, properly so called, and the bronchia. The first reaches from the lungs to the fauces or bottom of the mouth, and the other creeps into the whole substance of the lungs, and is divided into innumerable branches, all which consist of cartilaginous segments, and contractile membranes, and terminate in small vesicles, like bunches of grapes, and adhere to the small branches of the bronchia, and so constitute the principal part of the substance of the lungs.

All the pipes, from the beginning to the end, are encompassed with a membrane consisting of longitudinal and annular fibres, with many glands, which have numerous excretory ducts. These pour out a thin, ro'cid, lymphatic humour into the passages formed for breathing. The lungs likewise have arteries from the bronchial artery, which proceed from the trunk of the great descending artery, and are divided into three branches, one of which runs externally upon the wind-pipe, and the other two through the whole substance of the

the membranes of the trachea and the bronchia of the lungs. The veins come from the bronchial veins, whose branches are propagated in the same manner as the arteries, and terminate in a great trunk which goes to the descending vena cava, and into the azygos or vein without a fellow. The nerves proceed from the par vagum and the intercostal nerve.

These canals, thus constituted, serve for the easy intromission and expulsion of the fluids, and are necessary to promote the circulation of the blood, and for the preservation of life. For this purpose the glands excrete a thin lymph, to prevent the lungs from growing dry, as well as to keep them soft and slippery; and when it has performed its office, it is resolved into a vapour, and so flies off with the breath. The sensible nervous, as well as muscular coats give them a motion of constriction and dilatation, which serves to promote the ingress and egress of the air, as well as the secretion of the lymph by the glands, and likewise to facilitate the circulation of the blood through the bronchial vessels. But as these membranous canals are not sufficient of themselves for the performance of respiration, the lungs, pleura, diaphragm or midriff, the intercostal muscles, and those of the abdomen contribute thereto, inasmuch that they have a very close consent between each other; so that it is impossible one part should act without putting the rest in motion.

When all these parts are duly constituted, and in a healthy state, respiration will be rightly performed; but when they are disordered; the breathing must also be hurt. But as we are speaking of coughs, I shall omit the other disorders, and observe, that a cough is to the lungs what vomiting is to the stomach, that is, its tonic motion is inverted; for in this disorder the constriction of the bronchial canals begins at the bottom, and from thence is continued to the upper part, which being violent, forces the air out of the lungs in a rapid manner. When these are thus affected, they draw the other parts designed for respiration, and those connected thereto, by consent, into convulsive motions. Hence it appears why vehement coughing shakes the whole chest,

chest, abdomen, and the rest of the body: and on the contrary, when the diaphragm, stomach, gullet, the nerves of the pericordia and those that depend thereon, as also when the pituitary membranes of the nostrils are vellicated by any cause, the windpipe is drawn into consent, and a cough is produced.

Now if the spasmodico convulsive motion is the formal ratio of a cough, thence it follows, that a vellication will produce this convulsive motion, and will become the proximate cause of a cough. Therefore all coughs have their seat in the breast, though the cause may be sometimes elsewhere: and the variety of causes which contribute to a cough, will beget the several kinds of it, which we now propose to say something about.

Thus a phthical or *consumptive cough* arises from a colliquation of the vesicles of the lungs, by an ulcer formed therein; for the ulcerous matter by vellicating the lungs produces a cough. Besides this, there are symptomatic coughs, which proceed from an inflammation of the lungs, a pleurisy, a schirrosity and vomica of the lungs, from an inflammation of the diaphragm and the liver, and from breeding of teeth. Hence it appears beyond all dispute, that the cause of a cough may be seated in other parts beside the breast, and that it is owing to a convulsive motion of the nerves.

Thus also any strange body getting into the lungs will occasion violent coughing; as most experience when any thing is said to have gone the wrong way. A cough may likewise be caused by a defluxion from the stoppage of perspiration, for then the acrid matter will irritate the lungs, and consequently produce a cough.

From what has been said, we may safely conclude, that particular habits or constitutions of body may have a particular kind of cough. As for what Mr. *Gibson* says, that high feeding may cause the lungs to grow too large for the chest, and so occasion a cough, there can be nothing in it; for no fat was ever yet seen on the lungs. But when the abdomen is overloaded with fat, the diaphragm or midriff may be pressed upwards, and so lessen the cavity of the chest, that there will not be

room

room enough left for the lungs to play in, and then a cough may be produced.

Now as there are different kinds of coughs, we cannot be too careful in attending to the symptoms of each, in order to discover from what cause it proceeds, and then we may enter more directly and with certainty upon a cure.

Thus a consumptive cough is attended with weakness, loss of appetite, and wasting away of the body. A cough proceeding from tubercles of the lungs or a vomica, is little or nothing when he is at rest or stands still in the stable; but if he is put to any hard work, he will cough almost incessantly. When a cough proceeds from the liver he will always have a working at his flanks. When the lungs are stuffed with slimy matter which occasions a cough, it may be known by his thick breathing, by the openness of his nostrils, by a wheezing of the throat, by the large quantity of white phlegm proceeding from his mouth and nose, especially after drinking or exercise, and lastly by the motion of his flanks.

This last case is an asthmatic cough, or one that attends the moist asthma. But as for the nervous or dry asthma, it has other symptoms; for a horse has then all the signs of health, except a cough, which often returns, and sometimes plagues him incessantly by fits, without bringing any thing up. And the time of the return of the fit is very uncertain, yet he has generally something of a cough in the morning or after drinking, or when he is affected by the changes of the weather.

When a cough seated on the lungs is not too far gone, and the horse is young, there is reason to expect a cure; in order to which it will be proper to take away a moderate quantity of blood, to clothe him well, especially about the head, and to keep him well littered. His diet should be scalded bran with a spoonful of honey in each feed, and his drink water-gruel. The medicines should be mercurial, which should be given over night, and then purged off the next morning. Only at first he may take two mercurial balls together, that is one each night, and a purge the next

next morning after the second ball has been taken. These may be repeated again three or four times, once a week, taking care the horse does not take cold. The mercurial ball may be made thus:

Take round birthwort, gentian, bay-berries, myrrh, and mercurius dulcis, of each a quarter of an ounce: reduce them to powder, and make them into a ball with a sufficient quantity of honey, for one dose.

The purge may be as follows:

Take of succotrine aloes ten drams; of Epsom salt an ounce; of flour of brimstone half an ounce; of oil of aniseed thirty drops: make them into a ball with honey. Or this,

Take of succotrine aloes half an ounce; myrrh and gum ammoniac, of each a dram; of saffron half a dram; of flour of brimstone a dram: make it into a ball with syrup of madenhair or syrup of coltsfoot.

When the symptoms are violent, the mercurial ball may be given always two nights together, instead of one, without danger of salivation, for the brimstone given in the purge will repress the activity of the mercury.

Take of colts-foot two ounces; raisins stoned, and figs, of each an ounce; of liquorice root half an ounce: boil these in three quarts of water to two, but don't put in the figs and liquorice till towards the last; then sweeten the decoction with four ounces of honey.

This decoction is for two doses, one of which is to be given in the morning after the purge, and the other the morning following. When the disease has been in some measure subdued by these medicines, we may proceed to milder mercurials, mixt with resolvents and pectorals.

Take cinnabar of antimony and gum guaiacum of each eight ounces; of powder of liquorice four ounces; of balsam of sulphur two ounces; with a sufficient quantity of honey, make them into a paste for twelve balls, one of which is a dose.

One

One of these balls is to be given every morning for two or three months. The horse must not eat or drink for two hours before he takes the ball, nor for two hours after; but he may go to work as usual, and may be fed with his ordinary quantity of oats, and a little scalded bran between. In the winter time the chill must be taken off his water.

When the cause of the cough is seated in the liver, it may be known by the yellowness of the eyes, mouth, and lips, a light coloured dung, a deep coloured water, a short dry cough, a wanting to drink often, with a dulness and heaviness of the whole body, and sometimes yellow clouds in the eyes.

When this distemper is recent, it is not hard to cure; but if it has continued a long time, and there is reason to conclude there is an imposthume in the liver, there can be little hopes of restoring the horse to health. The above symptoms shew that there is an obstruction of the biliary duct of the liver, which prevents the gall from flowing into the guts and colouring the dung; when at the same time it abounds in the blood, and is partly carried off by the urine, which gives it the dark colour. This is in all respects a true jaundice, and the cough is only symptomatical, and therefore for the cure we must refer you to the cure of the jaundice.

The *asthmatic cough*, in which a horse breathes very quick, with a wheezing and rattling in his throat, is not incurable, unless it has continued long, and the horse is old. When the disease is recent, the horse young, in good case, and full of blood, we must begin the cure first by bleeding plentifully, and repeating it when the lungs seem to be very much oppressed, or in a violent fit of coughing. Likewise the mercurial balls may be given over night, and purged off the next morning as above directed. Or for the purge,

Take of succotrine aloes an ounce; gum ammoniac and gum guaiacum, of each half an ounce: of saffron a dram; of oil of aniseeds thirty drops; of syrup of garlic enough to make them into a ball for one dose.

When

When the lungs are stult with phlegm, which may be known by his wheezing, garlick is alone a very useful remedy to open the pipes, and it will be proper to give him a head two or three times a day. The mercurial ball may be repeated about three times, with seven or eight days between the repetition of the doses. On the days of purging he must have scalded bran with a small feed of corn. In general he must be kept warm, and out of the wet, and his water must be milk-warm. Instead of the garlick he may have the following balls.

Take the powder of the roots of Florentine orris, elecampane, and liquorice, of each four ounces; gum ammoniac, garlick, and balsam of sulphur, of each two ounces; of the root of squills half an ounce; of oil of aniseeds an ounce: make them into a paste for balls with a sufficient quantity of honey. Each ball must be of the size of a small pullet's egg.

One of these is to be given every morning, letting the horse fast two hours before, and two hours after. These medicines must be assisted with open air and moderate exercise, which, if rightly managed, are sufficient alone. That is, it must always be proportioned to the horse's strength and constitution: it must be continued two or three hours, and the horse must be suffered to go his own pace.

The *nervous asthma*, which is the forerunner of broken wind, is always attended with a dry, husky cough. Horses that are afflicted with this disease seem to be well in all other respects, and go through their business with a good deal of alacrity. But they have fits of coughing, which are very uncertain as to the time of their return, for it will sometimes be a week, a fortnight, or three weeks. This shews that there can be no fault in the original conformation of the heart, lungs, and thorax, as *Gibson* has erroneously supposed; for then the cause would always exist, and the coughing be incessant. Sometimes change of weather will bring on the cough, or sudden stopping after hard riding. In this disorder the horse has no running at
his

his nose, nor voids phlegm by the mouth; for after the most violent fit, nothing comes from him but a little clear water. He is seldom or never off his stomach, but rather a voracious feeder, even to the eating of his litter, unless in hot weather, when being kept in a stable, the want of air may hinder his feeding.

When this distemper is so far confirmed, as to become what is properly called a *broken wind*, his inspirations are always more slow than his expirations; for he draws in his breath slowly, and his flanks fill up and rise very gradually, but fall again suddenly, because his breath is forced out through his mouth and nostrils with great rapidity, which shews a convulsive disposition of the parts designed for respiration.

The time when a horse falls into this distemper, is about eight years old, very seldom so much as a year before or after that term. The cough may begin when he is four or five years old, and continue till seven, and when he is coming eight the disease begins to be very visible; for the cough is not only very violent, but he heaves and labours with his flanks almost without intermission, especially after feeding or drinking. There is likewise a continual working of the nostrils, and a motion of the fundament.

When a horse has long undergone this disease, it is no wonder the parts of respiration, and those adjacent, should be so affected with this continual labouring as to enlarge the heart and other parts; and so far *Gibson* is in the right. But there is a great deal of difference between the cause of a disease, and the effects which that disease produces.

A broken-winded horse is always best at grass, because this always passes off without distending his belly; whereas hay fills him up in such a manner, that the midriff is more prest toward the lungs, which hinders their playing, and consequently must exasperate the disease.

As a broken-wind seldom or never comes on suddenly, but by degrees, it will be the best way to prevent, if possible, its coming to any height. Therefore

fore when a horse has only a dry obstinate cough, and feeds greedily at the same time, eating his litter and drinking heartily, it will be proper to bleed him in the plate or neck-vein; then the mercurial ball should be given him over night, and purged off next morning; or you may let it remain two days before you purge it off. If you have a mind to give it in a morning, he must fast two hours before and three hours after it; and then give a purge the next morning, or the morning following that. The same method may be repeated again in a week or ten days, twice or thrice. On the intermediate days he should have pectorals, which have been found by experience to be very good in these cases.

Take of fallad oil half a pint; liquorice, elecampane root, bay berries, flour of brimstone, of each four ounces; aniseeds, tar, and garlic, of each two ounces; of saffron half an ounce; of sugar six ounces; of honey four ounces; with a sufficient quantity of linseed oil: make them into balls of an ounce and a quarter each.

One of these may be given every day, when the mercurials, and purging are omitted. They are likewise proper to be carried about with you on a journey, or to any place at a distance from where you may chance to be.

As these sorts of medicines are only calculated to ease the cough, a radical cure cannot be expected from them, and therefore something more powerful must be given to take away the cause as much as possible. Mr. Gibson looks upon mosaic gold to be a great secret for the cure of this disease. He says it is a composition of quicksilver, tin, sal ammoniac, and sulphur: but he was not chemist enough to know that all the quicksilver flies off, and that this medicine may be made without any quicksilver at all. In reality mosaic gold is nothing but tin divided and rendered of a gold colour by this process. Now the chief use of tin in medicine has been to kill worms, and it is very good for this purpose when calcined or given in filings; and I have reason to believe that this will prove a better
medicine

medicine for that purpose : but how far it is good in this case my experience fails me ; at the same time I am convinced that there may be many virtues in tin that are yet undiscovered ; and it would be great pity to reject a medicine because we are unacquainted how it operates, or because it is given in cases in which its efficacy was never known before. For these reasons I shall give you the medicine just as he has set it down.

Take of aurum musivum or mosaic gold eight ounces ; myrrh and elecampane in fine powder, of each four ounces ; aniseeds and bay berries, of each two ounces ; of saffron half an ounce ; of oxymel of squills enough to make it into balls.

“ This, says he, is a mercurial preparation, and is very safe, and I have often used it with success in obstinate dry coughs ; and it may be given a long time together without the least danger, that is for a month or six weeks. Each ball should be of the size of a pullet’s egg, or a large walnut. It gives great relief in nervous disorders.”

Hence it appears that *Gibson* gave this because he took it to be mercurial ; and this mistake was very lucky, if it has the virtues which he ascribes to it. The following balls have often been found efficacious.

Take of cinnabar of antimony six ounces ; of garlick four ounces ; Florentine orris, elecampane root, gum ammoniac, myrrh, and assa foetida, of each two ounces ; of saffron half an ounce : make them into a paste for balls with a sufficient quantity of honey. Each ball must be of the size of a pullet’s egg. Or,

Take of antimony in very fine powder eight ounces ; powder of liquorice, elecampane, Florentine orris, myrrh, and assa foetida, of garlick four ounces ; of wild valerian root two ounces ; of saffron an ounce : make these into balls with a sufficient quantity of sallad-oil.

Garlick, as I observed before, is very good in these cases, and a head of it may be cut small and mixt with his feed occasionally, which will afford some relief.

Some

Some wet the feeds with chamber-lye, which if of any efficacy, it must be owing to the salts, which are of the nature of sal ammoniac.

When a horse's wind is quite broken for want of his taking medicines in due time, or for any other reason, and falls into a fit in which he can neither eat nor drink for want of breath, he must then have as much air as possible, by opening the door, window, or any other place by which it may enter in. In this case it will be proper to take away three pints of blood, and to repeat it as occasion requires: but he must have no internal medicines till the fit is over, for they would do a great deal more harm than good. Sometimes this fit will last several days; when if he eats any thing at all, it must be a little scalded bran laid in his manger at night, and a little good hay upon clean litter; for sometimes he will like to eat the litter with or without the hay. If it be hot weather, he may have two or three quarts of water-gruel in the cool of the morning and the evening, for in the middle of the day he will be unable to swallow. When he can swallow, he may be suffered to drink a little and often. In very hot weather it will be proper to take him out of the stable to some shady place, especially in the middle of the day, which will give him a great deal of relief. When the fit is off, he may be taken abroad, and rode a few miles very gently, suffering him to go his own pace, and if he wants to stop to take breath, he must not be hindered. After this, the horse with good usage and proper management may be able to do a great deal of business, till another fit returns, which perhaps may not be till the next spring or summer, and then not so violent as at first, especially if he is not kept too hot in a stable, and not suffered to eat as much as he would, particularly hay, because that distends his belly. But the best method is to keep him constantly at grass, and to take him up when you want to use him; for though this will not cure him, it will keep him in a tolerable degree of health. But then a horse that has been at grass some time will always be worse when taken into the stable,

stable, so that it may be doubted whether a good regular management in the stable will not be best after all.

Of a CONSUMPTION.

THERE is no part of the body, except the heart, which is of more universal use for the preservation of life and health than the lungs. This is the bowel in which the nutritious chyle is intimately mixt with the blood, and is assimilated with it. Through this all animals draw in vital breath, which is an elastic fluid that bestows on the heart and the other parts their strength and their systaltic force. But the greater the usefulness of this bowel is, the more is it exposed to disorders, which may be deduced from its texture.

The lungs consist of membranous vesicles which receive the air; of nerves which contain a very subtle fluid; and of various kinds of vessels which carry the blood and lymph: insomuch that it is no wonder that so many myriads of small vessels should be exposed to the congestion, stagnation, and corruption of the blood; and that various kinds of disorders should arise from thence. Among these is the *phthisis* or consumption of the lungs, of whose origin, process and cure we are now to speak.

A *consumption* is a wasting away of the body, with a difficulty of breathing, fits of coughing, a slow fever, a gleet at the nose, which sometimes throws out a yellowish matter, with a frequent sneezing and a quick motion of the flanks. This disease is attended with a dull, moist eye, and generally a heat in the ears and feet. They have little appetite, especially to hay, and when they eat their corn the feverish heat is most evident. These symptoms, or at least most of them, will attend an abscess or corruption of any of the rest of the bowels, in the same manner as the hectic fever in mankind. It is a flattering distemper, and the horse will seem sometimes better, and sometimes worse. Some

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will have a staring coat, while others have one that is sleek and smooth, according to the different causes from whence the disease proceeds.

The causes of this disease are schirrous tubercles which beset the lungs, and are hard to be removed on account of their constant motion. These tubercles are full of a viscid matter, which are generally the beginning of vomicae or abscesses of the lungs, which are contained in a kind of bag. When these break, they fill the lungs with a purulent matter mixt with phlegm, and then it is a true consumption. But these tubercles or schirrous knots may sometimes lie dormant a long while, without any other symptoms but a dry cough. But if these ulcerate at length, they turn to fistulas and cancerous ulcers, which will admit no cure.

Horses most subject to this disease are such as are hot and fiery, which show a great deal of vigour and activity at their first setting out, but soon flag and are jaded. Such as these cannot bear any hard exercise or labour without losing their flesh, and falling into a kind of a hectic fever, which makes them feel hot all over, and takes them off their stomach. A few days rest will set them to rights, but then they will relapse again with fresh labour, and never be able to endure any hardship.

With regard to the prognostics, if a horse retains a tolerable appetite for some time, and does not grow weak nor fall away much, there are hopes of his recovery. On the contrary, when his flesh and strength continue to decay gradually, it is a bad omen, though his appetite should not entirely leave him. When there is a yellowish gleet, or a foul coagulated matter distils from his nose, it is a sign that the lungs are wasted, and then there is no hope of his recovery. When the horse is young, and the matter white, which only returns by fits, or when it is clear like water, he may, by proper treatment, be restored to health.

As there is always some degree of an inflammation attends this disease, it is generally best to begin the cure with bleeding, and this should be but a little at a time, that is a pint every eight or ten days, while there is
any

any probability of giving relief. Then make rowels in the sides and breast, to draw off the purulent matter from the part affected.

With regard to internals, the same things will be serviceable as are given in colds; but the following balsamic balls excel them all.

Take gum ammoniac and benjamin, of each half an ounce; of hoglice six drams; of saffron a dram: make these into two balls with a sufficient quantity of anisated balsam of sulphur.

One of these may be given in the morning, and the other in the evening, continuing them for some time. They may be washed down with two or three horns of the pectoral decoction of the shops.

There is nothing will contribute more to the cure than good air and gentle exercise in a morning; and therefore, if it is convenient, the horse should be removed from low, boggy places, when he happens to be kept in such. If he is turned out to grass, it should never be where it is rank, but on some dry common or other place where the air is good. But the best pasture is the salt marshes, where a horse will recover without the use of medicines, if his case is not desperate.

A horse sometimes loses his flesh and wears away without any remarkable cough, running at the nose, or feverish heat, and at length becomes hide-bound. This may be owing to different causes: but there is often a swelling of the glands of the mesentery, which hinders the distribution of the chyle by obstructing the passages of the chyliferous ducts. In this case it will be proper to open the obstructions with mercurials over night, and purges the next morning. These may be repeated three times, with the distance of a week between them. In the intervals between the purges he may have an ounce of cinnabar of antimony, and half an ounce of gum guaiacum, either made into a ball with other ingredients, or mixed with his feeds, being first wetted. As the mercurials and purges have been already mentioned, they need not be here repeated. The cinnabar, &c. may be continued till the horse re-

covers his strength. Sometimes the spring grafs will cure them, or rather the salt marshes, especially if they are not too wet and damp.

Of DISORDERS of the APPETITE.

MOST disorders of the stomach in horses proceed from other diseases, and cannot be cured before the disease on which they depend abates is or vanquished. These have been already taken notice of in other places. But sometimes a *weakness of appetite* is an original distemper. In this case the horse is apt to mangle his hay, or entirely neglect it, which may be owing to too great an indulgence of corn: other horses neglect their hay through daintiness, and will eat none but the choicest: others again cannot bear hard labour of any kind without a diminution of their appetite for several days after. Sometimes horses may be little feeders naturally, and then they will keep their flesh, which they do not when it is a disease. When it is owing to a weakness of the stomach, the dung is soft and of a pale colour: this weakness may be induced by giving them scalded bran too frequently, or any other hot feed.

These horses may be restored to their former appetite by gentle exercise in dry weather in the open air, and by keeping them to dry meat, mixing a few beans with their oats. If the horse is so bad as to want medicines, give him half an ounce of succotrine aloes made into a ball with an ounce of conserve of roses, and washing it down with a pint and a half of smith-forged water; for nothing strengthens the stomach and bowels more than the iron wherewith this water is impregnated. The quantity of aloes is just sufficient to cleanse the stomach, and may be repeated two or three days together, unless it proves a purge, as in some constitutions it may, though qualified with the conserve of roses. Besides, as in these cases the horse's blood is commonly low and poor, these things are very proper to warm and enrich it, as they will strengthen the

the digestive faculties on which sanguification depends.

But when horses have their appetite diminished by being over fed, which sometimes happens when they are for sale, then it will be proper to bleed and purge, and to make rowels in the belly ; as also by giving them due exercise and a clean moderate diet. When horses are of a hot, fiery disposition, and are apt to fret themselves off their stomachs, they should be suffered to run abroad in the winter in the fields, where there is a proper shelter from the inclemency of the weather. But in the summer they should be taken up in the day time to prevent their being tormented with flies.

A voracious appetite renders a horse a foul feeder, and he is generally known by this appellation : and yet, to speak more properly, a voracious appetite is when a horse is more than usually greedy of his food ; whereas a foul feeder will eat his litter, be it ever so nasty, foul weeds, stinking hay, and even sometimes mold and wet clay ; and therefore this may more properly be called a depraved appetite. Others that are not greedy will, like girls troubled with the green sickness, eat what they can get off the walls that are near them. Now, as this is owing to the dictates of nature in girls, in order to correct the acid juices in the stomach, why may not this be nearly the same in horses ?

Constant exercise and daily labour may often cure these diseases without any thing else ; or let them drink water that is mixt with chalk in fine powder, or lime-water ; or when it proceeds from sharp humours in the stomach, let him have four hornfuls of a decoction every morning. But there must be ingredients enough to make the water soft and slimy ; and four ounces of linseed oil mixt with a pint of the liquor will make it have a better effect. As for those that eat nasty litter, they should never have it in their power, but should be kept sweet and clean, always removing it before it becomes suitable to their taste.

The following medicine has been given with success, when a horse has lost his appetite.

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Take two spoonfuls of the best honey : mix it with half a pint of mountain wine, and give it the horse, for two or three mornings, fasting ; then ride him gently after it, for about an hour, and give him water.

Of the COLIC and GRIPES.

VIOLENT pains in the lower belly may very properly be referred to disorders of the nervous system, which by consent affect other parts at a distance therefrom, and often produce pernicious effects. The seat is the whole intestinal canal, from the throat to the anus ; for when one part is grievously affected, all the rest of that canal may be drawn into consent ; or the inversions and disorders of the peristaltic motion of the guts may be communicated to all the rest ; insomuch that if the cause is very violent, the whole nervous system will be grievously affected.

When a horse has the *gripes*, he often lies down and springs up suddenly, rolls about, tumbles, and turns on his back ; he has also convulsions and violent sweats, which are often succeeded with cold damps, and are attended with a suppression of urine and costiveness.

The proximate cause of all pain is too great a distension, distraction and expansion of the nervous parts and coats ; or a strong spastic constriction or contraction ; and from these causes the pains of the intestines proceed. Thus, certain portions of the intestines may be distended above measure by wind pent up therein, or by a caustic, corrosive humour included in the membranes of the intestines, and so be constricted, and the cavity lessened, with a great degree of pain. Hence arises the distinction between the wind-colic or gripes and the spasmodic colic.

The horses called crib-biters are most subject to this colic ; for when they are nibbling the manger they suck in a great deal of wind, which sometimes blows them up, and produces this disease. In this case there is a costiveness, and almost always a strangury ; and there-
fore

fore the strait gut should be emptied with a small hand anointed with oil. This will sometimes make way for the wind, and then the horse will stale and become more easy. It is common for farriers to strike a fleam into the bars of a horse's mouth, and as it never does any harm, though it is hard to say what good it does, the practice may be continued. The following ball has a tendency to ease the pain, and to cause a passage downwards.

Take of Epsom salt two ounces; Venice turpentine and juniper berries, of each half an ounce; salt of tartar and spermaceti, of each two drams; of chemical oil of juniper a dram; of solutive syrup of roses enough to make them into a ball, to be given immediately.

As the staling depends upon the emptying of the guts, diuretics can have little or no effect till that be brought about, which this seldom or never fails to procure. If the wind and excrements come away, the horse generally stales very plentifully; but if the operation is slow, give him another ball two hours after the first; and instead of Epsom salt put in two ounces of vitriolated tartar. This may be again repeated two hours after, if there is occasion, which seldom or never happens. The horse should have fresh straw to roll and tumble upon.

After the pain is removed, which may be known by the horse's lying quiet, gathering up his legs without starting or tumbling; and if he continues an hour in that posture, all the danger is over. While he is in the fit he should be carefully attended, to prevent his doing himself any harm. After this he may feed upon scalded bran, and drink warm water gruel.

Mr. Gibson, instead of Epsom salt, orders an ounce of sal prunella; but this is not so good, for the reason already given, as well as from the experience of its effects. The common method of giving oil of turpentine, gin, pepper, &c. are very pernicious, for they are not only very heating, but, though designed to promote urine, cannot have such an effect at this time, and may bring on an *atonia* of the parts destined to make that secretion.

When the ball cannot be given whole, on account of the agitation of the horse, it may be dissolved in a pint of warm ale, and given as a drench; but then care must be taken to reduce the juniper berries to a powder before the ball is made.

The *spasmodic colic*, or *dry gripes*, as some call it, is always attended with costiveness, and the dung that comes away is black and hard; his urine is high-coloured, and he has a quick motion with his tail; his looks are dull, and his motions are sluggish. This, if taken in time, is easily remedied by emollients, and by giving a laxative consisting of two ounces of vitriolated tartar, dissolved in a sufficient quantity of water, and given him in a horn. A colic arising from drinking cold water when the horse is hot, may be cured by giving a cordial ball or two.

But the disease that is most dangerous, and which is often mistaken for the colic, is some inward inflammation, particularly of the guts, which is seldom found out till it is too late. As for the inflammation of the lungs, it may be known by the breath; and the inflammations of the liver by the symptoms of the jaundice or yellows. But an inflammation of any part of the guts has nothing particular to distinguish it from the dry gripes. This, for want of a timely assistance, generally terminates in a mortification; and then if any dung comes away, it is black, which is a sign that the horse is past recovery.

The way to prevent these fatal accidents, is always to be upon the watch when the horse has any symptoms of the gripes, and if he is costive, which is always the case in this inflammation, his body should be opened as soon as possible; not by purgatives which exasperate the disease, but by such things as will correct and discuss the offending humour, and carry it downward. Therefore the first thing to be done is to empty the strait gut by a small hand, and afterwards give an emollient oily glyster. Soon after this give the following ball.

Take of vitriolated tartar two ounces and a half;
of salt of tartar three quarters of an ounce: make
these

these into a ball with a sufficient quantity of lenitive electary.

If this does not produce an immediate effect, let it be repeated in two or three hours : the second or third dose seldom or never fails. But it must be remembered that these internal inflammations are always attended with a feverish heat ; and therefore if you lay your hand upon the horse's side, and find the heart beat more than forty times in a minute, you may find by the excess the height of the fever. Therefore when you find this runs high, and his water is scalding hot, you must never omit plentiful bleeding, to stop the progress of the inflammation as soon as possible. If the horse is in such pain that you cannot give him the remedy in the form of a ball, it may presently be dissolved in water, and forced down as a drench.

When a horse has the symptoms of the gripes, with looseness, and the dung has its natural colour, there is never any danger ; but when it is blackish and stinking, the bowels are already mortified, and then all help will come too late ; so that if you give him any remedies it will be to no manner of purpose.

When the looseness continues long, then

Take of diascordium an ounce ; roots of round birthwort, gentian, bay-berries, and myrrh, of each a quarter of an ounce ; make them into a ball with a sufficient quantity of oil of amber.

This may be repeated every four hours till the horse recovers. *Gibson* in the beginning of a mortification advises tincture of myrrh and Egyptian honey. This mixture indeed would be proper in outward applications, but to suppose it would reach the aggrieved part by giving it inwardly, is little less than madness, not to mention the deleterious quality of the verdigrease where-with the Egyptian honey is made. But though he recommends this, he owns he never tried it himself ; and I hope no one ever will, especially while there remains any hope of recovery ; for what is done afterwards when the horse is a dying is of little or no signification.

Of WORMS.

WORMS are living animals, of a various figure, structure, and magnitude, which proceed from the eggs of insects taken into the stomach with the food, and are bred in the cavities of the intestines, and nourished by corrupt juices. They produce various symptoms, and disturb all the animal functions.

These worms are of three kinds ; *bots*, the *teretes* or round worms, and the *ascarides*.

Bots are bred in the stomach and resemble wood-lice, only they are rounder, and have sharp, small, prickly feet along the sides of their belly, by which they adhere closely to the part where they are bred : those in the stomach are red, but those which skulk in the strait gut are white. The first of these often occasion terrible symptoms, and throw the horse into convulsions. Dr. *Bracken*, who retains the exploded doctrine of trituration or grinding of the stomach for the performance of digestion, denies there can be any worms in that part. He does not deny but that worms are found in the stomach after a horse is dead, but then he affirms they creep there, after the grinding power of the stomach ceases. He likewise owns that worms have been voided by the mouth and nostrils of the human species ; but then he supposes they run away upwards or downwards, as they can, to avoid being crush'd to death : he likewise adds, that worms that have been vomited up have never been very lively. If this reason is of any weight I can contradict it from experience ; for I once saw a worm crawl through the nostrils of a woman, that was several inches long, and as lively as any earth worm could be. But let that be as it will, he would now be accounted but a poor philosopher, who should assert, that digestion is performed in the manner this gentleman mentions. It is now allowed by all able physicians, that the solution of aliments in the stomach is performed by heat and a menstruum. This last is principally the saliva which mixes with the food in chewing, and being of a fermentiscible nature, dissolves that part of the aliment that is most fit
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for nourishment, or at least extracts the finest parts, or such as are most proper to enter the lacteal vessels. Besides we find many substances that we swallow which are not triturated, or ground to powder. Thus if you swallow a bit of boiled carrot without chewing, a nut-kernel, or an almond, you will find them come away with very little alteration; which shews that the force of the stomach is merely imaginary. Nor can it be reasonably asserted, that this power in horses is greater than in men, because the coats of the stomach are thinner in horses than in men. Add to this the experience of every groom, who often finds oats come away from horses, that have been swallowed whole, with very little seeming alteration. But to return to my subject.

The *teretes* or round worms are like earth-worms, and are of the same kind as those that are commonly voided by children; only they are sharper at their ends than earth-worms, and are more callous in the middle. With these sharp ends they prick and corrode the guts, and sometimes make their way into the cavity of the abdomen: at least they devour so much of the best juices of the aliment, that the horse seldom thrives till they are dislodged. In children they seldom exceed the length of a span, but in horses they are often eighteen inches long, and as thick as a finger.

The third sort are the *ascarides*, which are small and slender, like needles, and are chiefly found in the small intestines, which they gnaw and vellicate, and often come away in large quantities with the excrements.

There is a fourth kind of worm, called the tape worm, which has not been taken notice of by authors as afflicting horses; yet as it has been found in the bodies of most other animals, there is little doubt to be made, but it is sometimes in horses. This runs all the length of the guts, and has been found in men to be forty feet long.

Among other causes, it is certain that the food of horses is most likely to contribute to the generation of worms; for as they eat many kinds of grass and herbage, wherein the eggs of these animals may abound, it is no wonder they should be conveyed into the stomach and guts by these means. The bots are found in horses in
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the months of May and June, and continue to afflict them for a fortnight or three weeks, and then disappear. The round worms and ascarides infect horses at all times of the year.

Bots are visible to the naked eye, if the strait gut is examined, to which they stick, and are often thrust out with the dung, along with a yellowish matter like melted brimstone. These only make a horse uneasy, by causing a tickling, as in men; for which reason he often rubs his backside against a post. But those that take up their residence in the stomach have quite different effects, which appear all on a sudden, and throw a horse into convulsions, with violent agonies. The round worms give so little disturbance, that they are hard to be discovered, unless by his voiding one or two now and then. Sometimes great numbers will come away together, when they are very small, and have had but little time to grow.

Ascarides may be soon found out, because they are often voided with the dung; and they make a horse look lean and jaded, his hair stares, he often strikes his hind feet against his belly, he remains very quiet for a little while, and then gets up and feeds, without attempting to roll or tumble.

The cure of bots in the strait gut is very easy, because you need do nothing more than give him savine chopt very small along with chopt garlick, twice a day, with moistned oats or bran. The dose for one time is a spoonful of savine and four cloves of garlick. But if a horse is turned into a good pasture at that time, even this trouble may be saved.

When there are bots in the stomach, no time is to be lost; because, when the convulsions have shut up the horse's mouth, he cannot be brought to swallow any thing. Therefore give him two drams of mercurius dulcis in conserve of roses, or in water and flour made into a paste, as being nearest at hand; because fetching any thing that causes a delay may be of dangerous consequence. It may be washed down with a hornful of warm water. There can be little doubt of the nature of the convulsions, if it be considered that this distemper always appears at one particular time of the year, viz. in May or June.

If this medicine procures a truce, you may give him three or four hornfuls of the following decoction, three or four times a day.

Take favine, garlick, and valerian root, of each two ounces ; of camomile flowers an ounce ; of saffron two drams : boil these a little in four quarts of water, and then strain off the liquor. When it is cool, add two ounces of the fetid tincture, which is the same as tincture of *assa foetida*, and two ounces of the tincture of castor ; mix them. Shake the vessel every time you give any to the horse.

As these convulsions proceed from worms, the speediest method of cure is by destroying the cause, which is to be done only by anthelmintics, or worm-destroying medicines ; though in regard to the symptoms I have mixt cephalics therewith ; insomuch that the virtues of both being united, we may hope for the better success. *Gibson*, instead of the above, advises pennyroyal and rue, and half an ounce of castor and *assa foetida* to be tied up in a rag, and then hot water to be poured upon the ingredients. Now, what great virtues can be drawn from these, which are the principal cephalics, every apothecary's apprentice is able to determine : therefore what I have prescribed is a much better and a more efficacious medicine. These tinctures may be made by putting half an ounce of castor in powder or well bruised into half a pint of common brandy, and an ounce of *assa foetida* to half a pint of spirits of wine, and letting them stand by the fire side, and they will be fit for use in a few days time. It will not be amiss likewise to observe, that *Gibson* prescribes handfuls, which is a very indeterminate quantity, and ought to be banished out of every receipt where the virtues of the herb so prescribed are to be depended upon.

Round worms, though they produce no violent symptoms, yet they prey, as it were, upon the vitals of the horse, and render him dispirited and inactive. To dislodge these, bitters are of great use ; and aloes given to an ounce and a half, with a dram of the oil of favine, will be sufficient for this purpose. This likewise will be sufficiently purgative, without the addi-

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on of jalap, which *Gibson* directs. If this should fail, we must have recourse to the preparation of tin; and as the mosaic gold is only tin reduced to a powder, and a little coloured, nothing can be more proper. Therefore, half an ounce of mosaic gold, and half an ounce of myrrh, made up into a ball, and given twice a day, will soon destroy these troublesome animals. When any come away, it is a sign they are all killed; and then the horse may take two or three aloetic balls to carry them out of the body.

The ascarides are not seated in the strait gut, like those in the human body, but seem to be lodged in the small guts, near the stomach, and devour the most nourishing part of the aliments. They often cause the horse to fall into sick fits, of no long duration; after which he eats his meat as heartily as before. However, they cause the horse to grow lean, and look as if he was surfeited; his mouth appears whiter than usual, and smells offensively.

The worms may be dislodged with mosaic gold above-mentioned; or with two drams of mercurius dulcis, made into a ball with an ounce of conserve of wormwood, and as much powder of myrrh as will make it stiff enough for a ball. It must be given in a morning, and the horse must fast three or four hours before and after the taking it. The next morning he must have an aloetic ball to purge it off. These may be repeated two or three times more, with the interval of seven or eight days between.

There are other ways of giving mercury or quicksilver which will answer the same end. Thus you may mix half an ounce of *Æthiops mineral*, with a sufficient quantity of extract of savine to make it into a ball. If you mix the *Æthiops mineral* with a dram of the oil of savine, and an ounce of succotrine aloes, and make them into a ball with solutive syrup of roses, then there will be no need of a purge the following day. Or you may kill two drams of quicksilver with half an ounce of Venice turpentine; rubbing them together till the globules of the quicksilver disappear, and then mix them with the aloes and the oil of savine as before.

fore. But the dose must be repeated but seldom with any of the compositions of mercury or quicksilver, for fear of a salivation, which a horse is more subject to than a man.

All metallic substances that may be taken inwardly, seem very proper to kill the worms ; for we know by experience, that iron will do the same as tin and mercury ; and it has been usual to give an ounce of the filings of iron every day, with wetted bran for this purpose. For the same reason smith's forge water is a very proper drink. But as for lead and copper, or any of their preparations, they should never be given inwardly upon any account. There have been preparations of gold, which have been highly recommended for various diseases ; but the dearness of that metal, renders all the enquiries into the propriety of the encomiums entirely unnecessary.

Gibson seems to reject the powder of tin, for no other reason than the difficulty of making it ; but I have obviated that objection, by substituting mosaic gold in its room : and where that is not to be had, half an ounce of the filings of tin will answer the same purpose. Some give equal parts of crude antimony and brimstone morning and night, and others the same quantity of equal parts of cinnabar of antimony and guaiacum ; but nothing can be better than what is already recommended. I have purposely avoided mentioning any strong purges which some advise, because they always do more harm than good, except in some particular cases. When the horse has a weak stomach, a quart of smith's forge water is very good, but it may be mended with camomile flowers, wormwood, orange peel, the lesser centaury and other bitter herbs, allowing about four ounces to three pints of water, and letting them boil for a short time. Some recommend two ounces of *Æthiops mineral* mixt with the same quantity of powder of aniseeds, and made into a ball with a spoonful of honey.

Of COSTIVENESS, a LAX and SCOURING.

THE excrement or dung is chiefly the remainder of the aliment, when the chyle is extracted from it as it passes through the guts; I say chiefly, because it contains some part of the other juices which it receives in passing through the intestinal canal, such as the grosser parts of the bile or gall, which it receives from the liver, the remainder of the pancreatic juice which it receives from the sweet bread or pancreas, and a fluid which proceeds from the glandulous coats of the intestines. All these excrements are carried out of the body, to keep the blood and humours free from filth, and preserve them in that temperate disposition which is necessary for life and health.

This excretion is not only necessary for the purposes above mentioned, but for the solution and termination of those diseases, which never go off without an evacuation. And therefore an enquiry into its nature, is not only necessary for the sound, but for the morbid or diseased state of the body; to assist us in our judgment concerning both. By this means we shall be able to discern the state of digestion, the elaboration of the chyle, the secretion and excretion of the gall, the strength of the peristaltic motion of the guts, and the constitution of the nervous system.

Thus when the dung is much paler than ordinary, it shews the bile or gall is not duly secreted by the liver, and that there is a want of it in the intestines. This want may arise from an obstruction of the biliferous ducts, or from their constriction as in the yellows or jaundice; or the colour of the gall may be changed by too great a quantity of four or acid humours abounding in the first passages. Now as the gall serves to stimulate the guts to an excretion, this may be the occasion of costiveness and griping pains.

Likewise when the dung is hard and dry, high coloured and comes away in little balls, it shews the gall is secreted in too great a plenty; and this happens more frequently

frequently in the summer than the winter, if the horse is kept in the stable. The strong smell of the excrements is likewise owing to the gall, for the paler they are the less is their smell; and when they happen to stink it is a sign of the mortification of some part of the intestines. When the excrements are mixt with a thick slime of a weak digestion, and when the quantity is larger than common, and thin with a good appetite, at the same time that the body wastes away, it shews the villous coat of the guts is smeared with a slimy matter, which will let nothing pass but the thin watery part of the chyle, while the gelatinous and nourishing part is excluded and comes away with the dung. But when it comes away in small round bits, and very hard, it is a sign of the obstruction of the mucous glands of the guts, or a great heat therein, and that the peristaltic motion is too languid.

In general when the dung is voided in a regular manner, it is a sign of health, and when it is disturbed or irregular, it shows a disordered state of the body. In all diseases of the head and nerves there is a costiveness, such as pains in the head, the epilepsy, the palsy, the vertigo and convulsions. A costiveness likewise is often the forerunner of fevers, and an attendant thereon. Likewise in most chronic distempers the belly is slower than ordinary, which shows how much the process of this secretion ought to be attended to.

Costiveness in horses is most frequent in hot weather, from an increased perspiration, from being kept to hard dry meat, or from want of air and exercise. Sometimes it becomes habitual, and then the horse never enjoys full health, but grows lean with a feverish heat and a staring coat.

When the heat of the weather occasions this disorder, an opening diet with scalded bran will effect a cure, as well as in the other two cases, at most he needs have nothing more than from two to four ounces of Epsom salt, dissolved in water. But when it is become constitutional it is not so easy to be removed. It may happen, though very rarely, that a slow belly may be no disease, but rather a sign of strength and a good digestion; and

and then we have nothing to do but prevent its increase, with now and then an opening diet. But when it produces the symptoms above-mentioned, we must have recourse to a constant opening diet, together with emollients. The best opener is scalded barley; and he should have the water that it was scalded with to drink. All strong purges are as bad as poison, and therefore must be carefully avoided. The horse must have such laxatives only that produce their effect without raising any commotion in the blood. Among this I know of nothing more safe or certain than Epsom salt. Four ounces may be dissolved in a pint of water and given him for a dose; but this may be either increased or diminished according to its operation, and according as you would have it purge either more or less. Fennugreek seeds, and linseed, on account of their oily mucilaginous quality, are very proper to render the guts slippery, and by that means to make his dunging regular. He should have an ounce every day mixt with his feed. Or they may mix it with half an ounce of the best aloes, and as much spermaceti, made up into a ball with honey. But this must be repeated but seldom; that is once in four or five days.

When the body of a horse is uncommonly open and he dungs like a cow; he is then said to have a *Lax*, or when he has a purging for a few days only. But when it continues he is then said to have a *Scouring*. This may proceed from various causes, as from a sudden stoppage of perspiration, from a ravenous feeding, from hard riding or violent exercise, and then there is a discharge of slime or greasy matter; or from worms. Sometimes it is the consequence of other diseases, and sometimes it is a critical discharge of noxious humours.

With regard to the prognostics, when it proceeds from a sudden stoppage of perspiration, commonly called a cold, it is never dangerous; nor yet when it is the effect of voracious feeding. The same may be said of that which succeeds hard labour. When scouring is habitual, it may go off as the horse advances in years, that is, when he arrives at seven or eight.

eight. That which succeeds or attends other diseases, cannot be judged of without enquiring into the nature of the disease itself. Besides it may sometimes be critical, and then it will carry off the disease it accompanies. When a looseness is spontaneous, and comes on without any previous evident cause, it is critical, and generally tends to preserve health and prevent diseases. And when it is from worms, the only way to cure it is to remove the cause.

In the cure we must consider the cause of the disease, and the state of the horse's body. A scouring that happens from a sudden stoppage of perspiration or hard labour, when the horse is full of blood and humours, should rather be encouraged than suppressed; and therefore he should have an open diet, and warm water gruel. Then reduce half an ounce of rhubarb, and two drams of virginian snake-root into powder, and mix them with a pint of warm ale for a drench. If a great deal of slimy matter is voided, then a more powerful laxative must be given.

Take of lenitive electary, four ounces; of Epsom salt two ounces; of gum guaiacum, half an ounce: grind the gum and the salt together, and then mix them with the electary. This done pour in four ounces of linseed oil, fresh drawn over them, and incorporate them together. Afterwards, add a pint of warm ale by little and little, so as to make a uniform mixture, and then give it the horse as a drench.

This may be repeated twice or more every other day, if there should be occasion. When the slime is come away, the horse will immediately return to his appetite. Sometimes after the horse has recovered his stomach, the dung will have a mixture of grease, or be covered with a thin greasy skin, in which case it will be proper to give the following alterative ball:

Take succotrine aloes and bay-berries, of each half an ounce; Virginian snake-root and gum guaiacum, of each a quarter of an ounce; of saffron, a dram; of oil of amber, a spoonful: make these into a ball with common treacle.

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This being given the horse twice a week, will compleat the cure without any thing else ; by bringing away all the glutinous matter which lurked in his guts.

When a looseness is attended with a fever, it must neither be encouraged, nor stoppt, but something must be given that will strengthen the passages, without locking up the offending matter. For this purpose there is nothing better than rhubarb.

Take of good rhubarb, in fine powder, half an ounce ; of Virginian snake-root a quarter of an ounce ; cinnamon and saffron, of each a dram. Make these into a ball, with a sufficient quantity of lenitive electary.

This will operate a little, and the night after let the horse have the following decoction given as a drench.

Take of logwood, three ounces ; of water a quart : boil them to a pint, and towards the end add two drams of cinnamon.

The rhubarb ball may be repeated once in three days, and the drench every day, if the fever and purging do not abate. Some instead of the former drench, give half an ounce of diascordium in a pint of red wine ; but the logwood is a safer and a better medicine.

When these things have not the desired effect, and the horse has no appetite but looks full in the belly, with distended flanks, the logwood drink or the diascordium may be given morning and night ; and their astringent virtue may be assisted with a glyster.

Take of pomegranate rind, two ounces ; camomile flowers and red roses, of each half an ounce : boil them in two quarts of water to one ; then strain off the decoction and dissolve in it Venice treacle and diascordium, of each an ounce, to be injected immediately, and repeated once a day till the disease abates.

N. B. It must always be injected warm.

When the flux is exceedingly violent, and the horse seems to be in immediate danger, we may have recourse to opiates.

Take

Take of Venice treacle, or diascordium, half an ounce, or an ounce; of liquid laudanum, a dram; small and strong cinnamon water of each a quarter of a pint, and mix them for a dose.

The chief danger in these sorts of loosenesses, which are attended with pain, is their turning to a mortification; and therefore the use of astringents is warranted, to prevent it as soon as possible: but it would be better if it could be done without. There is a medicine lately discovered, which has a wonderful virtue in curing the worst of fluxes in men; and that is the celebrated glass of antimony. Now, considering how agreeable all antimonials are to the constitution of horses, there can be no manner of danger in making the experiment. Two drams would be a sufficient dose. It may be given every day for two or three times; but if the operation be violent, which can hardly be the case, there must be a day between each dose. I must confess, I never have tried it yet, but we may reason from analogy, that there is little doubt to be made of its good effects. But it must be remembered, that he is to have no liquid till three hours after it has been given him. It may be mixt with a little of the cordial ball, for the sake of his swallowing it easily.

When the horse by any of these means is pretty well recovered, and begins to return to his appetite, he should not be fed freely at first, but should have a little at a time, and often. The same may be said of his water; and if the weather be cold, it should be a little warmed. Besides, if he has now and then a cordial ball, he will recover his strength and spirits the sooner.

Some young horses of a weak constitution are often subject to scouring, without any manifest cause, or without any great sickness. This will sometimes require strengtheners, or astringents, as the symptoms shall appear more or less violent. Horses of a hot fiery temper have often the weakest digestion, and will scour after the least exercise. But the reason given by *Gibson* to support it, viz. that their oats come away whole in their dung, is absurd; for when they are swallowed whole, they will always do so, notwithstanding the supposed

supposed grinding faculty of the stomach. Oats coming away whole, is only a sign that the horse ate them greedily, or did not give himself the trouble to chew them; for the stomach has no such power of grinding the aliment as hath been attributed to it. This was observed before; to which I shall add an experiment, easy to be made, that may convince any one; which is, that if you mix oats with paste, and cause the horse to swallow it, those oats will always come away whole, though the horse has never so good a digestion.

The absolute cure of such horses as these must be the effect of time, joined to a due regulation of their diet, never suffering them to eat voraciously, but keeping them within due bounds, both as to the quantity and quality of their meat and water, letting them have but a little at a time of each. Now and then their way of living may be varied with the addition of beans, pease and tares.

When this scouring of young horses is obstinate and runs into excess, the same astringents may be given as in a common looseness; such as logwood, diascordium, and Venice treacle. But here observe, that I do not take Venice treacle to be an astringent properly so called, but only as it tends to send the humours thro' the skin by perspiration, and as by the quantity of opium it contains, it abates the peristaltic motion of the guts. Therefore sometimes what many authors attribute to a weakness, may only be the effects of too lively a motion; and this accounts for hot fiery horses being very liable to this disorder. Sometimes this disorder may proceed from an obstruction of the mouths of the lacteal vessels by slimy matter, and then a summer's grass, or the salt marshes will remedy this disorder; because grass commonly occasions a purging at first, which will carry off the contents of the stomach and guts, and thoroughly cleanse them; after which chylification will be performed in a regular manner.

The purging that attends horses that have been long surfeited, if their appetite remains good, should
always

always be left to nature, for in time it will go off gradually, all remains of the disease will vanish, and they will recover their flesh to a wonder. But if they have a bad appetite, the best way will be, to turn them out to graze in the day, and to take them home in the evening, unless the nights are warm.

When horses have a great purging after violent diseases, which impairs their strength and wears them away, you may conclude it is owing to some inward decay, which will admit of no remedy; just like a colliquative diarrhæa in men in the last stage of the consumption, which is always a sign of approaching dissolution. In this case, it is of little consequence, whether the seat of this disorder is in the lungs or liver, or any other *viscus*, because the nasty stinking slime which comes away with their dung, is nothing else but the matter of an imposthume out of the reach of medicine.

Of the JAUNDICE or YELLOWS.

THE diagnostic signs of the jaundice, are costiveness, a dusky yellowness of the eyes, and all the internal parts of the mouth. This is attended with sluggishness and want of appetite, hard, dry dung, of a pale yellow, or a light pale green; dark dirty saffron coloured urine, which on the ground looks as red as blood. If he has a fever along with these symptoms, and they continue to increase, the horse will soon grow frantic, it being a sign of the inflammation of the liver. When the distemper is chronic or continues a long while, the horse will be dull, heavy, and, inactive, with a surfeited look, and will be often turning short, and looking to the near side, with a twisting of his body. The off-side of his belly will feel hard and somewhat distended from the swelling of the liver.

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The jaundice is either *idiopathic* or *symptomatic*; the seat of the first is in the liver, and the second may supervene to some other disease; or it may be critical when a fever is declining, and then the horse soon recovers his appetite, begins to look lively, the fever ceases, and the yellowness soon wears off.

The cause of the *idiopathic jaundice* is always seated in the liver. This is a noble *viscus*, which is supply'd with a great variety of vessels, in order for the secretion of the saponaceous fluid called the bile. This proceeds from the mass of the blood and humours, and is carried by a peculiar canal into the small gut near the stomach, for the promoting digestion. Hence we may easily conceive that when its course is stop'd, either wholly or in part, it must regurgitate into the lymphatic vessels and the blood, and become the proximate and principal cause of the jaundice; and when the serum and nutritious juices are by this means mixed with the bile or gall, it is easy to explain why the parts free of hair have a yellow appearance, and that the urine should be tinged with a reddish saffron colour. Hence too the reason will appear why the dung is of a pale yellow or green, there being no mixture of gall with it, and the appetite and the power of digestion become weak and languid.

This disorder of the biliary duct, may either be from some obstructing matter, or from a spasm which constricts its capacity; and will not give admission to the gall. That the jaundice may be owing to spasms, appears from hence, that sometimes the jaundice will come on, and then disappear again in a short time, which cannot be owing to any peccant matter obstructing and stuffing the biliary vessel and ducts, because it soon vanishes without any visible reason. But that which is most usual is from the obstruction of the canal by some matter that plugs it up, and the softer this is, the milder are the symptoms which attend it. In men this passage is often obstructed by stones bred in this duct, but we have no experience that horses are so affected, which may be owing to their having no gall-bladder. Or the jaundice may be occasioned
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by the obstruction of the small ducts, by which the bile is secreted; for this will occasion the bile to return back into the lymphatic vessels, by which it will be carried into the mass of blood.

The mediate cause of the jaundice may be a plethora, or a fulness of blood and humours: for this will occasion a more languid circulation of the blood thro' the *vena portæ*; because in this state of the body the blood will become more thick and viscid, and will more readily stagnate in the small vessels. Therefore, when from this cause there is a schirrus, or induration of the liver, the secretion of the gall will be defective, and the signs of the jaundice will appear. Another mediate cause may be foul feeding, whereby bad blood will be generated, which will be particularly thick and impure.

With regard to the *prognostics*, when the horse is young and full of blood, the consequence of high feeding, and want of sufficient exercise, the cure will not be difficult. But if it succeed hard labour, which has hurt the liver, by an abscess or otherwise, the cure will be exceeding difficult. When the liver is schirrous, which may be concluded by the swelling of the off-side of the belly, about the region of the liver, the horse may linger a great while before it kills him, but he will grow weaker and weaker till he entirely becomes unfit for business. But if he retains his strength and vigour, without sickness, or loss of appetite, there will be no danger of recovery by proper means. When a jaundice is attended with an inflammation of the liver, if taken in time it will give way to medicines.

In the cure we ought first of all to examine whether he has a fever, and the degree of it, that we may judge whether the liver be inflamed or not. If it is we are to begin with bleeding, and repeat it occasionally as long as the symptoms render it necessary, and as soon as possible we must rub the blistering ointment into the side, all about the region of the liver. These things done will remove the inflammation, when they are administered in time. If any

thing more is wanting, it must be laxative glysters to bring away the fæces, for this disease is always attended with costiveness.

And here I cannot help animadverting on Mr. *Gibson*, who is well skilled in farriery, and has given more light into the diseases of horses, than any one man before him; and therefore I do not do it to injure his reputation. Mr. *Gibson*, I say, makes costiveness one of the causes of the jaundice, which is certainly always a constant effect. The costiveness may indeed precede the yellowness of the eyes and mouth; for as soon as ever the obstruction is formed, and the gall is not poured out into the gut as usual, a costiveness will naturally ensue; because, as I have elsewhere observed, the gall is a sort of a natural purge and stimulates the guts to the exclusion of the dung. Therefore as the yellowness cannot appear till the gall regurgitates into the blood; and this being the consequence of the obstruction, it is no wonder that costiveness should be the first symptom, though we can conclude nothing from it till the yellowness of the eyes appears, because it may arise from various other causes. And yet if we were carefully to attend to the colour of the dung, I make no doubt, but we might perceive the jaundice coming on before any other symptom of this disease is visible in any other part: for as the gall gives that tincture or colour that is natural to the dung; when that is wanting it must become pale more or less according to the diet that he feeds upon.

When the fever is gone off, if the jaundice still remains from the obstruction of the bilious duct, nothing can be more proper than Spanish soap to dissolve the viscid matter which plugs up the canal; when this is joined to a laxative it may be the more likely to produce a good effect, and therefore it may be prescribed thus:

Take succotrine aloes, rhubarb and alicant soap, of each half an ounce; of honey enough to make them into a ball, to be taken in the morning fasting.

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This may be washed down with half a pint of the following decoction:

Take parsley root, madder, turmeric and burdock root, of each two ounces; boil them in three quarts of water to two quarts; strain the liquor off and sweeten it with honey.

At night he should have half an ounce of the soap alone, and a pint of the drench, which may be continued for three or four days, and then the ball may be repeated; and so alternately till the disease is conquered. *Gibson* orders his ingredients to be boiled in smith's forge-water, but this is improper, for if chalybeats are given to soon, they will bring on a schirrus of the liver, and then the disease will be incurable; therefore the forge-water should be postponed till the disease is going off. Or instead of the soap alone, the following ball may be substituted, which is more efficacious.

Take cinnabar of antimony and Castile soap, of each half an ounce; of wood lice three drams, of saffron two drams: make them into a ball with a sufficient quantity of honey.

The diuretick salt is an excellent dissolvent in this case, and therefore a quarter of an ounce may be put in to either of the balls instead of the soap.

Dr. *Bracken*, who takes all opportunities to be extremely severe upon others, often lays himself very open to be lashed, otherwise he would never have affirmed that a stone in the gall-bladder had been the cause of the jaundice; for if he had ever examined the inside of a horse he might have known that he has no gall-bladder. He soon after affirms, that there is no difference between salt of tartar and salt of wormwood, as *Quincy* had done before him. But if this had been true, the college would never have given particular directions for the making salt of wormwood in their dispensatories. Besides, *Hoffman* and other good chymists, declare the contrary from experiments. Nor is he more happy in his prescriptions, for he directs an ounce and a half of rhubarb, and an ounce of aloes, and two drams of saffron, to be made into a ball,

with syrup of buckthorn, for one single dose, for the jaundice that succeeds the cholic; not to mention that if ever a horse had such a disease, it will vanish of itself in a few days without any medicine at all.

When the disease is of the mild kind, there will be seldom any occasion to repeat the first ball, for then it will disappear in three or four days. But when it continues obstinate, it may probably proceed from a schirrous liver, and the alterative medicines must be continued for some time, and you must assist them with rowelling. Neither will it be amiss to change the cinabar of antimony for the same quantity of Ethiops mineral; because this last has been found very efficacious in a stubborn jaundice.

Or instead of the alterative ball abovementioned, the following may be given night and morning, as before.

Take of Alicant soap, eight ounces; of Ethiops mineral, six ounces; of woodlice, four ounces; of filings of steel, three ounces; of saffron half an ounce. Make them into balls of the size of a pullet's egg, with a sufficient quantity of honey.

Of HURTS and STRAINS in the KIDNEYS.

THE kidneys of a horse may be overstrained several ways; as by drawing too great a weight, by heavy burdens on the loins, and by not permitting a horse to stale on journeys. This last indeed is not properly a strain, but it has the effects of one, because all the vessels being turgid and over-loaded, they must of necessity be too much stretched, and their tone debilitated, which is the case in all strains. The same may happen if a horse is hard worked, when he is full of blood and humours; or he may receive blows on the loins or other hurts, which turning to an inflammation, may draw the kidneys into consent.

When

When the horse has undergone any of the hurts or hardships abovementioned, which affect the kidneys, it may be discovered by a weakness of the back and loins, by difficulty of staling, by thick foul urine, sometimes bloody. These symptoms are attended with faintness, deadness of the eyes, and loss of appetite. But there is one sign very particular, and that is, he can seldom or never back without discovering signs of pain. The same thing will happen when a horse has been wrenched in the back, but then there is no great alteration in the urine, except its being a little higher coloured than ordinary, nor yet do he lose his appetite or flesh. When the disease has continued a considerable time, it is attended with all the signs of a surfeit. When a fever attends a difficulty of staling, it is a sign of an inflammation of the kidneys.

With regard to the *prognostics*, diseases of the kidneys are never without danger, especially when they continue long, and the horse breaks out into scabs and blotches. An inflammation of the kidneys is very dangerous unless taken in time. When a horse's urine is turbid and yet comes away without much pain or straining, while the appetite is good and his eyes are brisk and lively, there is no danger. As also when he stales, and the thick sediment abates by degrees till the urine comes to be of a natural colour. But when the urine comes to be thick and ropy, and full of ulcerous matter or blood, attended with weakness and want of appetite, the case is dangerous. When the difficulty of staling, and change in the urine proceed from a cold only, this disease may be easily cured. When the gleeing of the yard is the consequence of a cold, laxative physick and balsamics, will carry it off. But as these last are only a symptomatic disorder, regard must always be had to the primary disease, which see.

The cure, as soon as the horse has received any injury, must be begun with plentiful bleeding, to prevent an inflammation; and if the hurt is very violent it must be repeated occasionally. To heal the internal hurt, to cleanse the kidneys, and to make the urine

pass freely, nothing can be better than the following drench, which must be administered morning and night, when there is no inflammation.

Take Venice turpentine and sperma ceti, of each half an ounce; of essential oil of juniper, thirty drops. Incorporate these together, and then mix them with a pint of the following decoction, and two ounces of syrup of marshmallows.

Take of ground ivy and plantane, of each half an ounce: boil them in three pints of water to a quart, and then strain off the liquor.

This is a great deal better than Locatelli's balsam, Irish slate, &c. which are commonly given; for Locatelli's balsam is nothing but oil, bees wax, and turpentine coloured with red saunders. *Gibson* has the following balls:

Take Irish slate in powder, and sperma ceti, of each half an ounce; of salt petre six drams, with a sufficient quantity of Barbadoes tar, and liquorice powder, and make them into balls: Or,

Take of Locatelli's balsam, an ounce; the powders of Florentine orris and liquorice, of each half an ounce; of sal prunella the same quantity; of sperma ceti, six drams: make them into balls with the syrup of marshmallows.

Either of these are to be given night and morning, till eight or ten of these balls are taken, giving a draught of the following decoction after each dose.

Take of the roots of marshmallows wip'd very clean, but not wash'd; of root of parslly and asparagus, wip'd and cut into slices, of each two handfuls; coltsfoot and horehound, of each a handful; of liquorice root slic'd, an ounce. Boil them in six quarts of barley water to four quarts. When the decoction is pour'd off and settled, warm the clear and dissolve in it an ounce of gum tragacanth and a pound of honey. A pint or three half pints is a dose.

I was willing to give you this method of cure, but the drink I recommended above is much better. If
the

the urine should still come away with difficulty, you may dissolve half an ounce of Castile or Alicant soap in each dose, and it will provoke urine more forcibly by dissolving the matter in the kidneys that hinders the secretion.

When the urine is made easy and in a sufficient quantity, and the horse recovers his strength and vigour, you need do nothing more than to give him a laxative purge or two to perfect the cure.

Take of aloes, an ounce; of gum guaiacum and rhubarb, of each half an ounce; of balsam of capivi, a quarter of an ounce: make them into a ball with syrum of balsam.

If notwithstanding all our endeavours, there is a plentiful discharge of foul turbid urine, with a nasty stinking smell, and a sediment of a dark red or purple colour, it is a sign of an ulcer in the kidneys, and the horse will continually waste away till he dies.

*Of a SUPPRESSION of URINE, the STRANGURY,
and PISSING of BLOOD.*

Suppression of urine, commonly called the strangury, may sometimes, though very seldom in horses, arise from a stone, or from an inflammation of the kidneys, or the neck of the bladder. Sometimes it may arise from a congestion of the blood about the neck of the bladder, which may be so distended, as to deny a passage to the urine. In some, it may be owing to a spasm or cramp in the neck of the bladder; in others to a palsy of that part; or from a tumour, abscess, or ulcer in the prostate gland. When blood descends from the kidneys into the bladder it coagulates there, and so plugs up the passage.

As therefore the causes of suppression of urine are various, we ought to distinguish them from each other, as well as we can. When there is an inflammation of the kidneys, there is preternatural heat in the loins attended with a fever. When there is a stone in the bladder, what urine is made

is mixt with a mucus or pus. When there is an inflammation of the neck of the bladder, there is a great heat between the *anus* and the *scrotum*. When there is a cramp in the neck of the bladder, the urine that comes away will have a strong smell. When the urine is obstructed by stones in the kidneys or urethra, the bladder will be empty, and the horse will not so much as strive to stale, nor stand straddling as in other disorders in the urinary passage, when the bladder is full.

When the urine is entirely suppress'd, and none at all comes away, the horse's body in a few days will be distended with water, and swelled to a surprizing degree; and his skin will be all over blotches, insomuch that, unless we can yield him speedy relief, he must die in a short time. Profuse sweats will alleviate the symptoms.

When there is an inflammation of the kidneys or bladder, or any of the urinary passages, you must take three pints or two quarts of blood from a vein in the neck or thigh. He must have no strong diuretic but such as are cooling, and which tend to check the febrile heat. Salt petre may be allowed and the neutral salts, such as vitriolated tartar with a decoction of parsley roots, ground ivy, marshmallow roots, and fennel roots.

Take of marshmallow roots, a pound; of parsley roots, half a pound; of water, a gallon. Boil them to three quarts, and strain off the decoction; then dissolve in it an ounce of salt petre.

Give the horse a pint of this liquor, four or five times a day. Likewise, take three pints of the same drink, and dissolve four ounces of Epsom salt in it for a glyster, to be immediately injected. Or the following:

Take of parsley, asparagus, and fennel seeds, of each half an ounce; of the powder of filipendula, the same quantity. Bruise the seeds and boil the powder in a pint of white wine, and sweeten it with honey.

Gibson prescribes medicines of so hot a nature, that they would have very bad effects in all inflammatory cases, and greatly exasperate the disease. However, I shall

shall let you see what they are, that you may be your own judge. He would have the following ball be repeated two or three times the first day.

Take of juniper berries pounded an ounce; succotrine aloes, and sal prunella in powder, of each a dram: of rectified oil of turpentine half an ounce; unrectified oil of amber and chemical oil of juniper, of each two drams: with liquorice powder, make them into two balls for one dose.

Let the glyster be made with two ounces of Barbadoes aloes; two ounces of turpentine beat up with the yolks of eggs; nitre bruised four ounces; juniper berries and bay berries bruised of each a handful; let these be infused in two quarts of a decoction of mallows and marsh-mallows, and add a pint of linseed oil.

Hot medicines such as these in inflammatory cases will certainly do more harm than good. I remember a man that some time ago, had a stoppage of urine from an inflammation of the kidneys. Some busy body advised him to take oil of turpentine, which he did with such an effect, that he soon became frantic, and was forced to be held down in his bed by two men. He was with much difficulty brought to himself again with bleeding and nitrous medicines.

The above medicines may be of use when the horse is not feverish, and when the passages are plugg'd up by a sluggish matter that will admit being dissolved; but even in such cases the best remedy is soap, which may be dissolved in some of the above drink, and given him as a drench; for liquid medicines in these cases are to be preferred to balls.

When the design of giving a glyster is merely to promote urine and allay spasms, then

Take two quarts of a pretty strong decoction of camomile flowers, and dissolve two ounces of salt-petre therein; then take four ounces of Venice turpentine, and incorporate it with the yolks of four eggs, and mixt it with the liquor: afterward add half a pint of linseed oil, and mix them for a glyster.

When the parts designed for the secretion of urine are cold and benumb'd, then the hot medicines will be of use; and the following poultice may be laid to his loins.

Take of mustard seed pounded small, or mustard ready made, a pint; of garlick six heads; of camphire two ounces; of soap enough to bring them to the consistence of a poultice.

This is a very penetrating composition, and may reach the cause of the complaint, and if it should raise a blister it will be never the worse; nay in inflammatory cases it may be the better. However, when you are certain the kidneys or the adjacent parts are inflamed, it will be best to rub some blistering ointment well into the loins, or about the region of the kidneys, because that will be the speediest method of removing the cause, by drawing off the peccant matter. If after the blister any signs of the strangury should appear, it may be removed by dissolving gum arabic in water, and giving some of it pretty often; or by the decoction of marsh-mallows made pretty strong. The poultice may be spread upon flannel and laid to the part, and then bound on with another piece over that. It may be renewed once in two days till the horse stales freely.

When an inflammation of the kidneys turns to an abscess, which may be known by purulent and bloody urine; two drams of calomel, which *Gibson* advises, can be of no use. But two ounces of bole armeniac, or French bole, given every morning in new milk, is likely to do good, not only in ulcers of the kidneys, but pissing of blood from any other cause. When one kidney only is ulcerated, while the other remains sound, the horse may do slight work for some time, but can never undergo any hard labour.

When an *Inflammation of the Bladder* is the cause of a suppression of urine, the horse will make frequent motions to stale, but cannot; his hinder legs stand wide and straddling; his flanks are distended; he often lies down and rolls on his back. These symptoms are always attended with a fever when there is an inflammation.

flammation. The fever always indicates bleeding, after which he may have the following drench.

Take of balsam of capivi an ounce; incorporate it with the yolk of an egg, and mix it with an ounce of spermaceti. When these are well rubbed together, add six drams of saltpetre; half a pint of water; half a pint of salad oil; and a quartern of compound horse raddish water.

This must be given immediately, and if the horse is not relieved, repeat it again every two hours till he is relieved. Three doses generally will abate symptoms of this kind, and render the horse easy.

When a horse *pisses Blood*, and it comes away suddenly without mixture, it is a sign it proceeds from the kidneys. But if the blood is small in quantity and of a dark colour, with or without purulent matter, it comes from the bladder. When the ureters are hurt by a rough stone, a small quantity of blood will be mixt with the urine, and there will be a difficulty of staling. When the coats of the bladder are hurt by a stone, so as to cause a little blood to come away, the horse will discover great signs of pain.

All bloody urine has some degree of danger, but it is most so, when mixt with any quantity of purulent matter.

In general the milk and French bole, recommended above is an excellent remedy, but it must not be mixt with Japan earth, as Dr. *Bracken* advises, for it will have very fatal consequences by stopping the flux too suddenly; and then the grumes will be locked up in the vessels, whence will proceed inflammations, ulcers, and putrefactions. But if the quantity is great, he may have an ounce of compound powder of crabs claws, and an ounce of scaled earth in a pint or two of new milk instead of the bole.

When the horse is full of blood and humours, it will be proper to bleed, let the cause be what it will. Then give him a pint of the following drink three times a day.

Take of ground ivy and plantain of each an ounce;
of spring water three quarts; boil them to two,
and

and strain off the liquor ; then add of saltpetre and the compound powder of crabs claws of each an ounce ; shake the vessel every time it is used.

This drink is particularly useful when any part of the urinary passages is inflamed, and may be given instead of that with balsam of capivi, when that cannot so readily be had ; it may be repeated in two hours time when the horse is not relieved. Two or three drenches will in a great measure remove the disorder, when administered in time, and may possibly prevent the erosions of the vessels, and consequently the pissing of blood.

Gibson recommends the following ball as a general remedy for pissing of blood.

Take conserve of red roses and Locatelli's balsam, of each six drams ; of sperma ceti, half an ounce ; of sal prunella and Irish slate, of each two drams ; of syrup of wild poppies, enough to make them into a ball.

The intention of this ball is much the same as the medicines recommended above, but is not so proper when the distemper is recent, as when it has continued some time ; that is, when the parts have been corroded by the acrimony of the humours.

Of a DIABETES, or PROFUSE STALING.

A Diabetes is a pissing of crude urine, and greater in quantity than the water that is drank. This generally proceeds from a laxity of the kidneys.

When a horse has this disease, he loses both his flesh and appetite, becomes weak, with a starting of the hair and a sticking out of the bones ; his eyes look weak and watery, and he decays gradually, till at length he is unfit for any manner of business. There are some young horses who seem to piss immoderately when they are first back'd, but as they only bespiss themselves through fear, no other remedy is required but gentle usage.

With-

Without proper management, this is a dangerous disease. The cure must be begun by proper diet, that is, dry meat, a moderate quantity of water given by a little at a time. Then the horse should have such astringents as strengthen the kidneys, not medicines that *Gibson* prescribes, that are only fit to stop a looseness. But lest I should seem to blame him without a cause, I will give you his prescriptions.

Take of conserve of red roses, two ounces ; of Loccatelli's balsam, an ounce ; of japan earth in fine powder, and sperma ceti, of each two drams ; of diascordium, half an ounce : make them into two balls with a sufficient quantity of starch, and roll them in liquorice powder.

He advises to give one of these balls in the morning, and the other in the afternoon, between his feeds, with four hornfuls of the following decoction after each.

Take jesuits bark bruised, four ounces ; of bistort and tormentil roots, of each two ounces ; of gum arabic, three ounces ; of red roses dry'd, an ounce : boil them in two gallons of lime water to one, and when the decoction is cold, dissolve in it an ounce of diascordium.

The first of these prescriptions will render a horse costive, and consequently will encrease the quantity of urine ; for the dryer the dung is the more he will piss, because the water must come away by one outlet or other. The second prescription in general is the same, and must have the same effects. As for the gum arabic it has a tendency to relax the kidneys, rather than strengthen them ; however, there are two good medicines in it, that might have been serviceable, if not clogg'd with ingredients, which serve for another intention. The bark is a universal strengthner, and the lime water will act directly on the kidneys, and brace up their relaxed fibres. He has another medicine for horses of small value, which is worse than the former, because it is more astringent.

Take of pomegranate bark, four ounces ; of balustines, two ounces ; bistort and tormentil-root, of each three ounces : Boil these in two gallons of water

water to one, and give three or four hornfuls after each ball.

The best medicines in this disease, are those which strengthen the kidneys without binding the body.

Take of the Peruvian bark, an ounce and a half ; of roch alum, half an ounce : make them into a ball with common treacle ; they should be taken morning and night, and washed down with three or four horns of the following decoction.

Take of the shavings of saffrafras, a pound ; of water two gallons : Boil them to one, and then pour off the liquor for use.

If those should fail, as they seldom will, then

Take of cow's milk, a quart : of roch-alum, half an ounce : boil them together till the milk turns, and separate the curd from the whey. This quantity of whey will serve for a day, and may be given him at three times.

A quart or two of smith's forge-water is a great strengthner of the kidneys, and may be given with or without his other remedies.

Of SURFEITS, HIDEBOUND HORSES, and the MANGE.

SURFEITS in horses have no manner of relation to those in men, for the former have their origin from disorders of the blood, while the seat of the latter is in the stomach, and may be easily removed by evacuations.

Surfeits may be owing to different causes ; but as the cure must be directed by the symptoms, it is not worth while to spend any time to search after them.

A horse is said to be surfeited when he has a dirty look, though no pains have been spared to keep him clean. He has a rusty appearance with a staring coat, and the skin is often full of scabs and dander, which when rubb'd off return again. Some have small bumps like beans and peas, while they are in the stable, which disappear when they are turned out to grass. Others have

have scabs all over which are sometimes dry and sometimes moist, with heat and inflammation and such violent itching that they rub themselves raw in many places. Some have no eruptions at all, but are dull, sluggish, and lazy, with an unwholesome look; others are lean and hidebound, while others again have a sort of lameness, with pains which seem to shift from one part to another like the flying gout.

With regard to the prognosticks, when surfeits are not taken in time, they are hard to cure, because they have taken deep root in the blood and humours. But when fresh, the cure is generally pretty easy. When the horse has a rough coat and hidebound at the same time, he will be cured with difficulty. When there are dry scabs or scales that peel off, it resembles the leprosy of human bodies, and the disease will bid defiance to remedies for a long time; but when the horse has eruptions attended with hot, itching matter, and fret off the hair, it may be managed pretty easily, unless it returns at certain seasons of the year. When a horse has long had this disease, and loses his appetite, is thick winded, coughs often, and blows and heaves when he is ridden, the case is desperate. In winter many horses have a rough staring or downy coat; but this should not be mistaken for a surfeit, for this coat seems only to be provided by nature as a defence against the cold.

A horse is said to have a *dry surfeit*, when there is no moisture of the skin attending the eruptions, or even when he has the other signs without any eruptions at all. However the bumps or lumps in the skin are not properly called a surfeit, and they may be cured by bleeding, and an opening diet without any thing else.

In the cure he should have a laxative purge once a week for three or four times.

Take of succotrine aloes an ounce; gum guaiacum and Epsom salt, of each half an ounce; of diaphoretic antimony two drams: make them into a ball with honey, and roll it in liquorice powder.

Take

Take gum guaicum and cinnabar of antimony, of each eight ounces; of flower of brimstone six ounces: make these into a fine powder, and give him an ounce in his morning and evening feeds, on those days on which purging is omitted. Likewise,

Take of raspings of the wood of guaicum three ounces; of spring water a gallon: boil them in a gallon of water to three quarts; then put in an ounce of the raspings of saffras, and half an ounce of sliced liquorice. Strain off the liquor and let it settle. The horse must have a quart of this decoction every day when he takes the powders.

After some days from his beginning to take the powder, if the scabs don't come off, you may rub the weaker mercurial ointment of the shops over him, and may repeat it once in three days. This ointment will cure this disease alone, but then it is not so safe.

The WET SURFEIT proceeds from sharp humours, and appears with moist eruptions. These eruptions appear all over the body, but principally on the neck, rump, and hips, with great heat and inflammation. Sometimes the neck or withers swells greatly in a night's time, and emits a large quantity of briny humour, which if care is not taken will turn to the poll-evil or a fistula. Sometimes this humour falls on the limbs and is hard to cure, without great care and trouble.

Sometimes the hair will peel off at the spring and fall, chiefly on the neck and face; but this happens ofteneft in the spring when horses are shedding their winter coats. This is always owing to mismanagement, or the undue administration of mercurials.

The WET SURFEIT may be cured with the same internals as the *dry*; but if you would have a purge that will work in twelve hours, you may dissolve four ounces of the lenitive electary, and the same quantity of Epfom salt in a quart of warm gruel, and give it him in the morning fasting. But take notice there is no need of the mercurial ointment, nor any other external medicine. And as some are too apt to use repellents, all such things should be carefully avoided.

The

The diet should be cool and opening, till the skin returns to its natural state ; such as scalded bran or scalded barley once a day ; and if the horse is hide-bound, he should have an ounce of sœnugreek seeds every day in one of his feeds for a month at least.

HIDEBOUNDNESS in horses is never an original disease, but only a symptom of some other disorder, or from working them beyond their strength. Sometimes this symptom succeeds fevers, surfeits, or convulsions. When it is preceded by none of these, the fault lies inwardly in one of the bowels, and sometimes is caused by worms, which last may be easily cured.

A horse is said to be hide-bound when his skin adheres so close to his ribs, that you would think it could not be moved. It should be taken in time, before it becomes chronical, otherwise it will be hard to manage. Mercurials in this case, or where there are worms, are of singular service ; therefore you may give two drams of mercurius dulcis over night. Make it into a little ball with conserve of roses, and the next morning it may be carried off with the following purge.

Take of succotrine aloes an ounce ; of myrrh half an ounce ; of rhubarb two drams ; of the oil of savine sixty drops. Make them into a ball with solutive syrup of roses.

These may be repeated three times in three weeks, and afterwards give the cinnabar powders before directed. Horses that are become hide-bound for want of a sufficient quantity of meat, should not be suffered to feed largely all at once, but their allowance should be increased by degrees, and when they come to their flesh the disorder will disappear.

The MANGE is a cutaneous disease, which renders the skin thick, full of wrinkles, and of a tawny colour, which may be plainly seen through the little hair that remains, which stands up strait. It appears chiefly about the loins, tail, and maw. The ears too are generally almost naked, but not raw, as in the hot surfeits, as well as their eyes and eyebrows.

The mange is like the itch and may come by infection. Like that too it will deprave the blood and humours,

mours, if not taken in time. It is more easily cured than that which proceeds from poor unwholesom diet. When it is fresh caught it may be cured with externals alone. Thus,

Take hog's lard six ounces; of flower of brimstone two ounces: mix them well together, and anoint all the diseased parts.

Or the following

Take of sulphur vivum in powder one pound; of sal ammoniac four ounces: mix them in a mortar with a sufficient quantity of hogs lard to bring them to the consistence of an ointment. And give the horse two ounces of brimstone every morning in a pint of water gruel.

If this should prove ineffectual, mix equal parts of this and the mercurial ointment together, and use it in the same manner. If you would have it still stronger, mix four ounces of the white ointment with two ounces of white precipitate for the same use. Some mix train oil and gun-powder, and bring them to the consistence of a soft liniment. Others mix gun-powder Barbadoes tar, and black soap. Some wash the diseased parts with beef brine which has cured a recent mange.

Inwardly mercurials must be given when the disease has continued any time, which may be either two drams of crude quicksilver killed with turpentine, or the same quantity of mercurius dulcis made up into a ball with a little common paste or dough, and purged off the next morning with any of the former aloetic purges; or he may take two scruples of mercurius dulcis, or half an ounce of ethiops mineral for three mornings fasting, remembring always when you give mercurials in a morning to let the horse fast two hours before and two hours after each, as well as to keep him warm and free from wet; letting him have a feed of scalded bran every day. If you have a conveniency of giving him a little exercise under cover, it will make the medicine perform its office the better.

When every thing else fails, the following composition has been of excellent service.

Take

Take two drams of mercurius dulcis and as much of the golden sulphur of antimony ; rub them so long together, till they are intimately mixed. This will serve for a morning dose, with the former precautions and management.

When the horse is got free from his distemper the place where he stood should be carefully cleaned and washed with soap-suds, as well as his cloathing.

Of the FARCY.

THE *Farcy* or *Farcin* has been mistaken by many for some one of the distempers already treated of ; but is properly a distemper of the veins, and, when inveterate, thickens their coats so as to make them appear like so many cords. Their size always bears a proportion to the greatness or smallness of the vessels they affect. At first one or more small tumours, like grapes or berries, spring out over the veins, which are very hard and soon turn to soft blisters, which breaking discharge an oily or bloody matter, and turn to very foul malignant ulcers. In some horses it breaks out in the head, in others on the external jugulars or neck-veins. In others again on the plate-vein, running downwards on the inside of the fore-arm towards the foot ; and sometimes upwards towards the brisket. In some the farcy begins behind about the pasterns, and along the large veins of the thigh, rising upwards into the groin and towards the sheath. Sometimes it appears in the flanks, and makes its progress towards the lower belly.

As to the prognostics, when the farcy begins on those parts of the head where the muscular flesh is thin, and the veins small, it may be cured with ease. But when it attacks the loose parts, such as the kernels under the jaws, nostrils, and eyes, and continues so long as to creep to the neck-vein, and renders it corded, it is more difficult to manage. When it begins on any part, where the veins are small and kept in constant agitation
by

by the motion of the horse, and always upon a stretch, such as the outside of the shoulder and the outside of the hips, the disease can never take any deep root; because the action of these parts has a tendency to disperse obstructions. It is a great deal worse when it rises on the plate-vein, swells and then turns corded, and the more when the glands or kernels called the axillary glands, which lie under the armpit, become tumid with the anguish. The cure is still more difficult and tedious when the veins on the inside of the thigh are corded, especially when it rises upwards and affects the kernels of the groin, and the cavernous body of the yard. When it begins on the pasterns, the success of medicines is doubtful, because they are apt to swell and turn to callous ulcers. The most promising sign is when the farcy is at a stand, and does not spread; but if it begins on one side of the horse, and passes to the other, it is a sign of malignity, and the event is doubtful. When it rises up to the middle of the back and loins, unless it began in the shoulder or hip; then the anguish may affect those parts without foreboding a bad event. For it may be cured without much trouble. Horses that are fleshy, full of blood, and humours, always fare worse than those that are in a moderate condition. Those that are very lean by hard labour, seldom do well with it. But when there is any internal decay, or if it attacks the spaces between the large muscles, there producing fresh swellings and large abscesses, the disease will always prove fatal.

When the farcy is an epidemical disease, and appears in several parts of the body at once, first upon the principal, and then proceeding to the spaces between the large muscles with an inflation and swelling of the kernels about the neck and throat, at the same time causing greenish or bloody matter to run in plenty from both nostrils, with the stench of a dead horse, he will soon die rotten. This may properly be called the pestilential farcy.

A *mild farcy* may be cured by bleeding alone, if joined to moderate exercise or labour, such as going to plough

plough and cart. I call that farcy mild that is only superficial on the smaller vessels; particularly when it appears on the head; the outside of the shoulder, the prominent part of the neck above the neck-vein, or near the withers or the outside of the hips.

A *moderate farcy* is when it seizes and produces cords in the large veins, as the plate vein, the jugular or neck-vein, and the thigh-veins. Or when they appear on the feet and pasterns rising towards the hock and knee, as also on the flank when they creep down towards the lower belly.

The *worst farcy* is when it appears on one side first, and then passes to the other, or when it breaks out on both sides at once, or when the sores and ulcers become malignant, and affect the whole habit of body.

Young horses whose heads are fleshy, are most subject to the farcy on that part. It rises on the cheeks or temples, and looks like net work, or small creeping twigs full of berries. Sometimes it inflames the eye, and sometimes little blisters run along the side of the nose, and sometimes round the lips, which are very troublesome to the horse, because they hinder him from chewing. When it rises on the outside of the shoulder, it runs along the small veins of the upper part of the arm, with heat and inflammation. Sometimes a few small buds will arise near the withers or on the hip, but these are of little consequence.

This disease at first is of the inflammatory kind, therefore it will require plentiful bleeding, especially when the horse is fat and full of blood and humours. But this must be only in the beginning of the farcy, and while the disease continues in the inflammatory state, for afterwards when it is ulcerated it will do more harm than good. Likewise the bleeding must be moderate when the horse is low in flesh. Besides his body must be kept open with the following cooling and laxative physick.

Take four ounces of lenitive electary; two ounces of Epsom salt, and the same quantity of saltpetre; dissolve them in a quart of spring water for a drink.

This

This must be given every other morning for a week, fasting two hours before and two hours after it. Then let him have warm water and a feed of scalded bran. After this, give him an ounce and a half of Epsom salt, and the same quantity of saltpetre, dissolved in water every day for three weeks or a month. The sores from the very first, must be anointed with the following ointment.

Take of ointment of elder four ounces; of oil of turpentine two ounces; of sugar of lead half an ounce; of white vitriol two drams: mix them together in a gallipot, after you have reduced the sugar of lead and the vitriol to a fine powder.

The buds and swellings must be anointed with this, and repeated as often as it becomes dry, which may be about twice or thrice a day, till the sores begin to run; and if the matter is thick and well digested, the disease will soon terminate. Sometimes the buds will disappear gradually with breaking, leaving little bald spots in their room, and then moderate labour or exercise will compleat the cure. But if dry lumps remain without hair; it will be necessary to give him two ounces of crocus of antimony, or crude antimony every day for the first fortnight, and then an ounce every day for the second fortnight.

When the farcy begins near the pasterns, or on the flank, or thigh-vein, or plate-vain; at first the swelling is often no bigger than a hazle nut. Sometimes there are two or three little hard knots in the vein, of the size of a horse bean, which if over looked increase gradually, and when the horse's blood is in a bad state, it will in a few days become an inch in diameter; that is from the thickness of a packthread, it will resemble a large rope. When it appears in the thigh-vein, it will cause a halting or lameness, and then it will be soon discovered; as also by the swelling of the hock. When it appears first in the small of the leg, feet and pasterns, it may be mistaken for the grease, till it rises upwards and fixes on the larger veins.

The cure must be begun with bleeding as before, and the following mixture must be applied to the vein as soon as possible.

Take

Take of common oil of turpentine fix ounces, and put it into a pint bottle; then drop three ounces of oil of vitriol into it gradually, for fear of a great effervescence, which may burst the bottle. That is, let the first small quantity that is dropt in have done smoaking, before you drop any more.

This mixture serves to abate the acrimony of the humours, to hinder the arising of fungous flesh, and to make the sores run. The part must be first rub'd with a woollen cloth, and then this mixture must be applied to all the buds and swellings, wherever they are, twice a day or oftener. But when the farcy lies loose in the fleshy parts, there must be equal quantities of the oils of vitriol or turpentine. This method may be continued a fortnight, or till the sores run plentifully with well digested matter, and begin to dry. Then mix equal parts of ointment of elder and honey for a liniment, to make the hair grow again. The following liniment is better.

Take of fallad oil three ounces; of spermaceti fix drams, of bees wax four drams: melt them together over a gentle fire, and stir them till they are quite cold.

Inwardly you must give him crude antimony as above directed, in the evening when he takes his laxative physick, and then crocus of antimony.

When there is a disposition in the blood to a farcy, it may begin from the pricking of a sharp spur; it may likewise arise spontaneously about the spurred part without any pricking at all; and then the hair will stare, and stand up like a tuft all round the buds and blisters, and the matter that runs from thence will be purulent, and of a clammy or greasy consistence. If this is not soon stop'd it will spread greatly. In this case use equal parts of the oils of vitriol and turpentine as has been mentioned above, and apply them twice a day. Likewise apply the following mixture all over the affected sid, to prevent the swelling of his belly.

Take of rectified spirit of wine four ounces; oils of vitriol and turpentine of each two ounces; of the best white

white wine vinegar six ounces : first put the spirits of wine, oil of turpentine, and vinegar together, and then pour in the oil of vitriol gradually, or

Take of rectified spirits of wine four ounces ; of camphire half an ounce ; dissolve the camphire in the spirits, and add of vinegar six ounces ; this done dissolve an ounce of Roman vitriol in a gill of spring water and mix them, shaking the bottle at the time of use.

These two last prescriptions are *Gibson's*, and they would answer the purpose pretty well, if there was no better to be had, to work a cure. The design is to abate the inflammation, and stop the progress of the disease. This may be performed very speedily by a mixture of oil of sweet almonds, and spirit of sal ammoniac. A weak sort is made by putting four ounces of oil, and an ounce of spirit into a glass vial, and shaking them together till they are incorporated. The strong sort is made by mixing equal parts of the one and the other. There is nothing repelling in this as there is in acids, particularly oil of vitriol, and vitriol and vinegar. I mean the oil of vitriol is a repellent, when it is so far weakened by other liquors, as to lose its caustic nature, which is the case in the first of the above mentioned prescriptions. On the other hand, when equal parts of oil of turpentine, and oil of vitriol are mixed together, the oil of vitriol does not act as a repellent, but as a caustic, and eats into the part it is laid upon.

When the farcy on the pasterns is discovered in time it may be cured without much difficulty ; the danger lies in mistaking it for the grease, or a disorder arising from another cause. But if we regard these diseases with due attention, we shall find they differ widely ; for the grease generally breaks out first at the bending of the pasterns backwards, and runs downward toward the heel, and if it breaks upwards, a sharp serum oozes through the skin, that sometimes brings off the hair, and by fretting the skin turns it scabby ; and if you lay your hand upon the part, you will find it hot. Now the farcy commonly begins to appear on the pastern

tern joint, and then it is only a single bud at first, on the fore part, or one side of the pastern, which causes a swelling of the joint. After this other buds arise in little round tumours, which make the legs look knotted like a crab-tree stick, and hinder the horse from lying down. Then the knots ascend upwards according to the course of the veins, into the hock, and from thence to the thigh, as has been already mentioned. When it begins on the shackle vein, it is where it passes over the great sinew behind. If in both cases it is taken in time, the humour may be repelled by a poultice made with bran and verjuice, bound round the part and renewed once a day. When there is any proud flesh, it must be touched with *Aqua fortis*, about an hour before the poultice is applied.

When the veins become corded, and ascend as high as the thigh veins, or any large vessel, a moderate quantity of the following mixture must be rub'd on the veins and swellings.

Take of linseed oil half a pint; oil of turpentine, and oil of petre of each two ounces; tincture of euphorbium, and tincture of hellebore of each two drams; of the green ointment of the shops two ounces; of oil of origanum half an ounce; of double aqua fortis half an ounce; mix them together, and when the effervescence is over, add two ounces of Barbadoes tar; put them in a bottle, and shake them together.

This is a stimulating mixture, and of great use to dissolve the coagulated blood in the veins, and restore the parts to their due tone and functions. It will be sufficient to apply it once in two or three days, unless there is matter underneath the skin, or proud flesh plugs up the orifices. In this case it must be taken down by a small hot iron, and the edges of the sore must be cauterised all round, if there is any fungous flesh thereon. When it shall chance to rise again, it may be touch'd with aqua fortis, or with quicksilver and aqua fortis, rub'd in a mortar to the consistence of a liniment, and smearing the ulcers with it, as often as they appear foul and rank. When the ulcers are moist

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lime-stone and burnt alum may be made into a fine powder, and strew'd thereon.

There are a great many desperate medicines made use of by the common farriers, which are not worth repeating, unless to warn others from using them. But the best way to prevent that is, to take no notice of of them at all. Some of their poisonous drugs only applied outwardly, have kill'd many horses, and dogs that have fed on their carcases have died likewise.

The following balls are proper in every state of the farcy, and have cur'd it in a week or two, when given before the skin has suffered much by the disease, by giving them twice a day. But when the farcy is inveterate, they must be continued a month or two, and sometimes three, not neglecting the outward applications.

Take eight ounces of cinnabar of antimony ; round birthwort, and gum guaiacum in powder, of each two ounces ; make them into paste, with a sufficient quantity of honey, and make balls of the size of a walnut.

Some recommend two ounces of quicksilver kill'd, with an ounce of turpentine, and made up in four balls, with gum guaiacum, diapente, and a sufficient quantity of honey, given twice a week with purges between, to prevent a salivation. Others rub the knots with the mercurial ointment, before they break, to disperse them ; and, after they are broken, with equal parts of turpentine and quicksilver rub'd together. But as the quicksilver will get into the blood by these means, the horse must be purged now and then, to carry it downwards.

Dr. Bracken ventures upon an ounce of butter of antimony, the same quantity of bezoar mineral, beaten up with half a pound of the cordial ball : the dose three quarters of an ounce, every day for a fortnight, or three weeks, fasting two or three hours after it.

Turbith mineral is a very likely medicine, given in small quantities, that it may neither make the horse sick, or raise a salivation. The dose is a scruple at a time, made into a ball with an ounce of Spanish liquorice.

It

It it to be given every other night for a fortnight, and then to omit it for eight or ten days, and repeat it again. When the horse's mouth begins to be sore, which may be known by his chewing, then give him gentle purges to carry the humours downwards.

But the most efficacious of all these medicines is calcined mercury, four grains of which, given every third night for three or four times, will have surprizing effects. It must be given with four grains of opium, and a scruple of camphire, and make it into a ball with a bit of the cordial ball, of the size of a walnut. The ingredients it is mixt with, will prevent its salivating the horse. In general it may be given according to the urgency of the symptoms, that is, every night, in very bad cases. But then his mouth must be watched, lest a salivation should rise contrary to expectation.

The *Water Farcy* or dropfy, has no resemblance to the common farcy, but is like the dropfy called the *Anasarca* in men. It shews itself in several parts of the body with soft swellings, which yield to the pressure of the fingers. Another kind begins with a feverishness and loss of appetite, but when the tumour comes to maturity, the appetite returns, and nature performs the cure, with the help of a feed of scalded bran, with flour of brimstone. The tumours are generally hot, and a little inflamed, which sometimes disappear of themselves, and sometimes break. Then they discharge a little scalding hot water. In a day or two they will digest, and heal, without turning to an ulcer.

The regular way of curing this last sort is by bleeding and diuretics. The following drink is effectual in this case.

Take the leaves and bark of elder of each an ounce; of camomile flowers half an ounce; of juniper berries bruised two ounces; boil them in two quarts of water to three pints, and then add an ounce of saltpetre, and two ounces of honey.

Give this every other morning, with an ounce of equal parts of gum guaiacum, and cinnabar of antimony once a day, in a feed of scalded bran. This may be continued about a week or longer if necessary.

In the *Dropsy Anasarca*, make use of the following diuretic ball.

Take of saltpetre two ounces ; of the powder of squills half an ounce ; of camphire a dram ; of honey enough to make a ball. This must be given once a day, with a horn or two of the above drink.

When the water has been carried off in a good measure by this method, then give him two or three purges, made with an ounce of succotrine aloes ; two drams of jalap, half an ounce of Epsom salt, and solutive syrup of roses enough to make them into a ball.

While he is taking the first ball, he must have the best of hay and oats ; but the first thing after his ball must be scalded bran, mixt with an ounce of crude antimony, and the same quantity of sulphur. This method will cure a horse that is otherwise sound. But when the dropsy proceeds from an inward decay, or a corruption of the liver, he will lose his appetite, and gleet at the nose, with a deadness in his looks ; you may, if it be worth while, attempt the cure of the original disease.

Of CRITICAL TUMOURS.

CRITICAL tumours are the consequences of acute diseases, when the febrile matter is thrown upon some particular part, which may either prove salutary, or otherwise, in proportion to the use and dignity of the part, to which the translation is made. If it falls on the internal parts or viscera, it is generally fatal ; on the joints it produces lameness. When it affects the muscular and outward parts, it should never be repelled, but brought to suppuration, and then the horse will be restored to his health.

When it falls on the glands under the jaws, or behind the ears, it begets the symptoms of the strangles, and then they must be often anointed with ointment of marsh-mallows ; their heads must be cover'd, and they must have plenty of gruel to drink. By this means they

they will break, and discharge a great plenty of matter. But if they should not break of themselves, they must be opened with a small hot iron.

Sometimes critical tumours affect the poll or withers, and cause the poll-evil or fistula. These are to be cured like disorders of this kind that arise spontaneously. When they appear upon the groins, they may cause the inside of the groins to swell. This swelling sometimes runs along the sheath, and towards the lower belly, breaking near the cleft.

When these swellings appear a little below the stiffe bone, or run towards the hock, they generally are separated into several small pustules, which without great care turn to scabby ulcers, which leave a thickness on the joint. Sometimes they fall upon the pastern joint, which must be treated with fomentations to make them perspire through the skin. They should be made scalding hot, and then flannel should be dipt therein, and wrung out dry. Then they should be applied as hot as possible, and kept round the part till they begin to cool; then apply another as before; this must be repeated six or seven times. The last should be bound on with another dry one over it, to keep up a constant perspiration. The fomentation may be thus made.

Take southernwood, the dried tops of sea wormwood, dried camomile flowers, of each an ounce; of dried bay leaves half an ounce: boil these slightly, and then pour off the water; to which add a pint of spirit of wine.

Of SWELLINGS from EXTERNAL ACCIDENTS.

HORSES are liable to disorders of this kind from blows, bruises and other accidents, which are always proportionable to the violence of the stroke or shock, by whatever means it is applied. Blows on the head may be so strong, as to bring on mortal convulsions. Bruises on the muscular parts may bring on an imposthumation; bad saddles may create navel gal's. In short, a horse may be hurt so many various ways,

that it is next to an impossibility to enumerate them all; nor indeed is it necessary, because in treating them there is but one intention of cure.

When the blow has been very lately given, and the tumour has no tendency to suppurate, you may venture to repel it by astringents, and if it should be great, you should make a revulsion by bleeding. Bathe the tumour with hot vinegar and verjuice, and when its situation will admit of it, make a bandage with flannel, and dip it in the same liquor, and then rowl it on. This should be applied frequently till the swelling and inflammation is abated. Sometimes a cold charge will be necessary, which is made with vinegar, bole, and the whites of eggs, which must be so mixt as to make it of the consistence of a poultice, and spread upon the part that is hurt. Or it may be made with vinegar, oil, and oatmeal. They may be applied twice a day after the bathing, till the swelling abates. Then to perfect the cure.

Take camphorated spirit of wine four ounces; spirit of sal ammoniac one ounce, and mix them.

This will take away the remainder of the swelling.

Sometimes it will appear necessary to make use of the fomentation mentioned in the last section. Some recommend two ounces of sal ammoniac, boiled in a quart of chamber lye, made warm every time it is applied.

When bruises are so great as to occasion an extravasation of the blood, which may lie under the cuticle or deeper, so as to cause little abscesses, the part may be scarified when it does not make its own way out through the rotten teguments. When this happens, you have nothing more to do but to anoint the parts affected with the white ointment of the shops, which is made with oil, bees wax and sperma ceti.

When a horse's mouth is hurt by bad bits or otherwise, we must take care to prevent an ulceration, which may be done by the following mixture.

Take spirit of wine and vinegar, of each four ounces; of honey an ounce; of burnt alum in powder two drams, and mix them in a vial. Wash the sores with this every morning and evening. This likewise

wife may be injected up the nostrils when there is a sore or a tendency to an ulceration in that part.

Of MOLTEN GREASE.

MOLTEN greafe is the voiding greasy matter with the dung ; which sometimes happens to very fat horses that stand much in the stable. Horses of hot constitutions which are apt to be costive, will sometimes void great quantities of slimy matter like corruption, and the balls of the dung will be covered with a pellicle or thin skin. This is a common symptom which attends the retention of the dung. Nor can either of these be referred to the melting of the greafe properly so called. But however, it is known that these symptoms are called by farriers molten greafe.

When horses void a matter of the colour of brimstone, it is a symptom of the worms, and weak horses will often void a loose slimy dung ; but neither of these are properly molten greafe.

A fat horse may have his greafe melted by hard usage, but seldom any other ; and this must be done by hard riding or working in very hot weather ; and then it is accompanied with a fever, restlessness, startings, tremblings, great sickness, shortness of breath, and sometimes with pleuritic symptoms. His dung will then be extremely greasy with scouring ; his blood will have the signs of an inflammation, that is, a thick fat skin over it of a buff-colour. The red or coagulated part is generally exceeding slippery ; and the serum is slippery and clammy. He soon loses his flesh, and if he recovers he becomes hidebound for a time, with a swelling of the legs. These, if not cured in time, will turn to the farcy or glanders, or an obstinate surfeit.

To prevent these consequences the horse should bleed plentifully to relieve the inflammatory symptoms, which should be repeated two or three days successively ; or till the buff coloured pellicle goes off the blood. He may also have a rowel in the breast : and when the working of the flanks begins to abate, he may have another in the

belly, and one on the inside of each thigh. Emollient glysters will be of great service to cool the interstices, such as have been already prescribed in other cases; taking care that no irritating ingredient enters therein. With this caution they abate the inflammatory symptoms and mitigate the fever, as well as bring away large quantities of greasy matter. Inwardly he must have the following infusion for a drink every other day, and the glyster every day.

Take of bayberries bruised, camomile flowers and rue, of each an ounce; of saffron two drams; pour a quart of boiling water upon them, and let them stand twelve hours. Pour the water off and dissolve therein two ounces of salt petre and two ounces of Epsom salt. Last of all, put in two ounces of spirit of wine and camphire.

Let the horse have as much warm water, or water-gruel as he will drink. When the horse has recovered his appetite, and the fever is gone off, he should have two or three gentle aloetic purges, because this distemper generally leaves a swelling of the legs behind it.

Take of myrrh, bay berries, round birthwort, and gentian, of each a dram; of succotrine aloes an ounce; of saffron two drams; of oil of amber a small spoonful. Make these into a ball with solutive syrup of roses. This may be repeated once in nine days, as long as any symptom shall require it.

Of a BONE SPAVIN.

A Bone spavin is a hard swelling on the inside of the hock of a horse's leg, which is of the hardness of a bone.

That which begins on the lower part of the hock, is not so dangerous as that which appears higher between the two round processes of the leg bone. Likewise a spavin near the edge is not so bad as one that is more inward toward the middle, because it does not so much affect the bending of the hock. That which proceeds from a bruise, is a sort of bastard spavin, and is not so bad as that which rises spontaneously. The spavins of colts

colts are of a kinder nature than those of full-grown horses. In old horses they are scarce to be cured at all

Whenever a fullness of the fore-part of an hock discovered after hard riding, that is likely to turn to spavin, you must endeavour by binding the cold charge round the part mentioned in *tumours from accidents*. It must be renewed several times a day, and the disorder must be treated in all respects as is there shewn

There are various methods, most of them very violent, for curing this disorder when confirmed, but none so good as the following composition.

Take an ounce of quicksilver and rub it with an ounce of Venice turpentine in a mortar till no part of the quicksilver can be seen; then mix it with four ounces of the green ointment of the shops: when they are well incorporated, put in a dram and a half of Spanish flies in powder, and a dram of corrosive sublimate, and two drams of oil of origanum.

This must be laid pretty thick upon the part, when the hair is cut off very close, and the horse must be tied up all day, and untied at night that he may lie down as usual. Then he must have a pitch plaister, or a sticking plaister over it, and bound on gently with a piece of tape or lilt.

When the blister has done running, and the scabs dry and peel off, the ointment may be applied again in the same manner as before. These two applications in colts and young horses, will make a perfect cure. But when the spavin has continued for some time, it must be renewed five or six times with greater distances between to prevent a scar or baldness. Once a fortnight or three weeks will be sufficient.

The horse must have moderate exercise between whiles and now and then a dose of laxative physic, as well as diuretics, with salt petre, and a decoction of lignum vitæ or guaiacum raspings to promote perspiration. His diet should be only oats and good sweet hay.

In an outward superficial spavin, the horse only grows stiff at first, and the spavin is plain and visible to the eye; but when it is more inward and rises more superficial and flat, or when it puts out towards the hollow of the joint, and rises upwards, it is very obstinate and hard to cure.

When it runs inward to the sinuofities of the joints, it is generally incurable. In these cases the horse goes lame a considerable time, before the spavin appears outwardly.

This sort seems to require very violent measures, but the gentle ones will have the most happy event, therefore it will be best to try the method recommended above; but when the spavins lie deep and run far into the hollow of the joint, a caustic ointment with sublimate or arsenic is the likeliest to succeed, because these things eat deep, destroy their substance, and procure a plentiful discharge, which perhaps will carry off all the remainder of the spavin. The same thing may be done by firing deep into the spavin. The iron should be in the shape of a fleam, but rounded on the face, that it may go deep, and thick on the back to retain the heat. There will probably be a large effusion of blood, but it may be stopt with a styptic, or rather with the agaric of the oak, called touchwood or spunk, or with a piece of puff ball.

The wound in some cases may be half an inch deep, and an inch long, with two or three short strokes on each side, according to the largeness of the spavin. There will be no occasion to renew the applications to stop the blood, if the method is used which was last recommended. Sometimes a gleet of viscid water will distil from the wound, and the hock will swell, which may be removed with the fomentations mentioned in punctured wounds.

The first dressings may be turpentine spread on tow, which may be afterwards mixt with precipitate finely ground; that is, two drams of precipitate to an ounce of turpentine. The discharge may continue for two months, and yet afterwards come to a good colour and consistence, and then the wound will soon heal.

In an old horse, firing him round the hock is the most likely method to succeed, so as to render him fit for some sort of business, but a perfect cure is never to be expected.

Of the CURB, OSSLET, JARDON and RINGBONE.

A CURB is a hard callous swelling, not unlike the spavin for consistence: it rises from the joining of the bones of the hock on the hind part, and forms a pretty large tumour from below the heel of the hock, and running a good way on the back part of the hind leg, covers the *epiphyfis* of the instep bone, and in some gummy horses spreads on both sides the legs. It is attended with stiffness and sometimes with pain and lameness.

The cure may generally be performed with the blistering ointment prescribed for the spavin. But if the curb is exceeding hard and obstinate, it will be necessary to fire it with a thin iron, which is the quickest way to get rid of it. You must make one line in the middle from the top to the bottom, and then cross way on each side like a feather. The lines must be pretty deep, and when they are made, a little mild blistering ointment must be laid over the part, and when it has done running, lay the strengthening plaister of the shops over the fore. If the horse is full of blood and humours, it will be proper to purge after the cure with some gentle physic.

OSSLETS are little hard substances among the bones on the inside of the knee. They grow out of the gummy substances, which fasten those bones together, when the horse is young, and before the joints are well knit. When they are taken notice of in time, a little oil of *origanum* rub'd on the part every other day will effect a cure; but if they are of long continuance they must be removed by firing.

A JARDON is a swelling on the outside of the hock, proceeding from a kick or some such accident. It is not dangerous because it does not affect the motion of the joint; and if taken in time, may be cured with the repeated application of vinegar. But if it is inveterate and creates a deformity, the best way is to blister or fire; a mild blistering is generally sufficient, unless the jardon is hard and insensible.

A RING

A **RINGBONE** is a hard swelling on the lower part of the pattern, which generally reaches half way round its fore part like a ring, whence its name is derived. It generally takes its rise from the joining of the great and little pastern bones, and causes a stiffness in the motion of the pattern and foot; and when it grows hard and large, brings on a lameness, especially when it falls downward to the coffin joint.

When a ringbone appears on the foot of a well shaped slender horse, it is not so dangerous as to horses that have large bones and are fleshy in those parts. For as the swelling is removed in these, a stiffness often remains. When it remains distinct in its proper place, it is always more easily removed, than when it spreads downward towards the coronet, on account of its affecting the coffin-joint. Sometimes it may be derived from that joint originally; and then the cure is uncertain. When a callosity is found under the round ligament that covers the joint, it is impracticable. When it unites with the ligamentous substance that joins the hoof to the flesh, it is apt to turn to a quittor. When it continues on the pattern without running down to the coronet, it is easily cured, and in colts wears off spontaneously.

A genuine ringbone requires no other remedy besides blistering, unless it be very hard, and then it will require blistering and firing. When there is a swelling which proceeds from the tendons, it is hard to be distinguished from a ringbone, but by its being more painful; and to cure this blistering alone is sufficient, which must be renewed two or three times if the urgency of the symptoms require it. When a swelling of the legs attends the ringbone, it will be necessary to give him two or three purges, and in some cases diureticks.

When the ringbone is hard and insensible like a piece of flint, there will be a necessity of firing it, because all other methods are too mild, which must be done with a thin instrument, and the lines must not be above a quarter of an inch asunder, and they must be crossed obliquely, with the same distances; then lay a mild blistering ointment over it, which will be generally sufficient for a cure. When it has done running,

Take

Take of the strengthening plaister eight ounces; yellow rosin and bees wax, of each three ounces; melt them together with a little oil, and make a charge to be spread over the pastern joint, covering the whole with flocks or the stuffing of an old saddle. The oil must be just so much as will keep the charge from being brittle.

In two or three days time when the charge is settled to the part, it will be proper to turn the horse out to graze. This method is to be followed when the ringbone falls towards the coronet of the coffin-joint; for firing may be performed safely all over the coronet, as well as caustic applications may be laid thereon without any danger. After which the charge must be applied, which prevents quittors and ulcerations under the hoof. Some draw out the foal by way of prevention, but it is seldom attended with success.

Of SPLENTS.

SPLENTS are hard excrescences which grow out of the shank bone, of various shapes and sizes. Some are large and others small; some are round and others have a ridge. When one rises on one side the bone and another on the opposite side, some take them for one, and call it a *thorough Splent*. As also another that is fixed like a wedge between the back sinew and the hard part of the bone, reaching across from side to side.

Splents on the legs of colts and young horses, seldom want a remedy, because they will fall of themselves, in proportion as the parts acquire a firmness. On the other hand, when the substance of a splent is become quite bony, it will be in vain to meddle with it at all; especially when the skin is quite loose over it. Splents never cause lameness unless they arise near the bending of the joint, or are so placed as to press against the back sinew.

At the time when the splents first appear, the best method of cure is to rub the small of the leg with vinegar or old verjuice, which generally stops their growth, and
causes

causes them to wear away insensibly. Some moist constitutions require purging and diuretics. When the splent is near the knee it must be treated as a bone spavin, by blistering and firing all over.

The cure of a splent between the back sinew and the bone is by boring it in several places with an iron that is not very hot, taking care not to hurt the back sinew, and avoidng the veins as much as possible; and then the horse must be fired all over the back part of the legs like a feather, making the lines pretty close together, but not deep. However, the best way is to try mild blisters, which bid fair for success, and will produce no deformity.

Of WINDGALLS and WINDY TUMOURS.

A *Windgall* is a flatulent or windy tumour, which yields to the finger being pressed, and when it is removed, returns to itself. They are known by the risings of the skin, and are plain to be seen.

Windgalls on the hind legs never cause lameness, but only a stiffness after riding. Those on the fore legs render a horse lame at first, which turns to a stiffness, attended with stumbling, or a disposition to stumble. But a day's rest will set them to rights again. Windgalls on the sinuosities of the hocks are always troublesome, cause a deformity, and, unless taken in time, will render a horse incurably lame. They are but small at first, but at length grow as large as a pullet's egg, and push out on each side of the hollow of the hock. Flatulent swellings above the knee always cause lameness. When under the fore part of the knee, in the interstices on both sides the joint, they are dangerous.

Windy swellings in the interstices of the muscles, of the hips and thighs, though blown up like little bladders, seldom cause lameness, and are easily cured. Windgalls that proceed from a natural weakness of the limbs are incurable, unless the constitution alters for the better.

When

When horses swell about the pasterns, with a fulness on each side the back sinews, we may conclude that windgalls are coming on; and then bathe the part twice a day with vinegar. Likewise the following fomentation may be used:

Take of oak bark an ounce; of pomegranate rind half an ounce; of the water of a smith's forge three pints; boil them to two pints, and then add two drams of roch alum. Soak flannel in this decoction, and bind it about the part while the horse stands in the stable.

When the windgalls are grown large and feel like kernels, or relaxed sinews, and are on the hind legs, the best way is not to meddle with them, for a travelling horse will never grow lame with them. But when they are seated on the fore legs, and make a horse trip and stumble, the cure may be attempted by mild blisters, which by often repeating will draw out the humour, disperse the wind, and remove them by degrees. This always takes off a windgall about the fetlocks, and often the windy swelling about the hocks; but then it has been often repeated, at such times as a working horse has been at rest from his labour: a little of the blistering ointment should be laid on every other day for a week, which will cause a plentiful discharge: and when the blisters are dried up, the horse may go to his usual work, for three weeks or a month, and then repeated when the owner can allow him leisure. Firing is the most expeditious way; but then it never makes a perfect cure, and leaves a stiffness on the joint; However it stops the increase of the swelling, and renders a horse more useful. The blistering ointment should be the same as is recommended in the blood spavin.

Puffs and windy swellings about the joint of the knee, which proceed from kicks or other external hurts, are best repelled by astringents, such as the strengthening fomentation, or decoction abovementioned; where, instead of the smith's forge water it may be boiled in vinegar; but I know not whether it will be better or not. If this will not do then blister, for they should be removed as soon as possible: but firing with a small iron

is the speediest way, making the lines as near together as possible. Then cover the knee with the strengthening plaister as abovementioned.

Windy swellings between the interfices of the muscles of the hips are to be cured by an incision, and then bring the wound to a suppuration; or wash the place with equal parts of white wine and vinegar; for when the humours are discharged, the wound will soon heal. These tumours are not dangerous, and will often yield to repellents; therefore they may be tried first.

Of the BLOOD SPAVIN.

A *Blood spavin* is properly a *Varix*, or dilatation of a vein. It is a soft, unequal, knotty, indolent tumour, yielding to the touch, and runs along the inside of the hock. The most remarkable part of the swelling is no bigger than a large walnut, and is generally attended with a weakness and lameness of the hock.

This disease, when recent, may be cured by remedies that are cooling, astringing, and drying, in which compresses may be dipp'd and bound on the part, or flannel soaked in the same, and bound on it hot. This must be repeated several times a day.

Take of oak bark two ounces; pomegranate rind and roch alum of each one ounce; boil them in two quarts of vinegar, or smith's forge water to three pints.

When this method is ineffectual, the vein must be taken up by opening the skin the whole length, and then passing a crooked needle underneath the vein, a little way below the swelling; the needle must be armed with a double thread waxed to tie up the vein. The same operation must be performed a little above the swelling, and the turgid part of the vein will come off by digestion, when the ligature rots off. The sore should be dressed with a digestive with turpentine, honey, and spirit of wine, which is softer and better than oil of turpentine. When it is well, the horse should be used very gently, till he recovers his strength.

When

When besides the blood spavin there are puffs and flatulencies in the hocks, in young horses they will give way to the above fomentation; but when they are obstinate, the veins must be taken up as before, and the puffs cured by blistering and firing, as has been before taught.

Of WENS or ENCYSTED TUMOURS.

WENS may arise in any part of a horse's body, and are always contained in a *Cystis* or *Bag*, which advances by very slow degrees, and the bag increases in thickness as the wen in bulk. In men they have different appellations, according to the humour or matter they contain; but in horses this distinction is needless, because they do not require a different method of cure.

When the wen has a small root and is pendulous, the best way is to tie a waxed packthread round it, which must be made tight by degrees, till the wen falls off. Afterwards it may be healed with a mixture of turpentine, honey and spirit of wine. When the wen is broad and tied down with several cords and strings, the best way is not to meddle with it. But if the wen is free from these and is thought curable, it must be either cut out or opened with a caustic. This done, it must be dressed with dry tow, and afterwards with the common digestive. If proud flesh arises it must be dressed with turpentine and red precipitate, in the proportion of an ounce of the former to a dram of the latter. When the proud flesh is very rebellious, you may strew the precipitate over it alone, or mixt with burnt alum, in equal quantities. If the ulcer is cancerous, it may be touched with a feather, dipt in the butter of antimony.

Horses have sometimes tumours on the heel or hock, which come to a considerable bulk, but are seldom painful, unless inflamed or suppurate. These differ little from encysted wens, and have much the same contents; some call these *bog-spavins*. Those on the elbow or heel of the hock, are seldom cured without leaving a blemish

or

or callosity. If they are discovered at first, the best way of curing them is by repellents; but when the vessels are broken, and the fluids extravasated, they may be brought to suppuration by ointment of marsh-mallows. But if the skin is thick, they may be opened with a knife, on the most depending part. The same caution should be observed, with regard to tumours on the processes of any of the bones, especially on the joints.

When the matter contained in these tumours is all discharged, the abscesses must be dried with soft doills, dipt in a mixture of turpentine, honey, and tincture of myrrh; and then there remains nothing to do, but to bathe the part once a day, with equal parts of wine and vinegar, with an eighth part of oil of vitriol, dropt into it very leisurely.

These sorts of swellings on the hocks, often contain a thick paste, and sometimes a thin clammy water, which Dr. Bracken takes to be the synovia of the joints, and has given it the name of the *bog-sparvin* above mentioned. He cured a colt of his own, by opening the tumour with an incision knife, or scalpel; first separating the skin from the tumour, taking care to avoid any vein as much as possible: then he opened the cyst, and a large quantity of brown glairy matter ran out. Afterwards he put in a powder made with calcined Roman vitriol, one third part of burnt alum, and a little bole armeniac mixt together. This consumed the cyst or bag in three or four days, by repeating it three or four times, and brought it away in sloughs or skins. The wound was healed with a warm digestive ointment with turpentine, honey, &c. But this was not brought about without a swelling of the joints, which was forwarded with warm fomentations, with flannel squeezed out from a decoction of rosemary, wormwood, savin, pennyroyal, thyme, juniper and bayberries bruised. This brought down the swelling, and the wound to a good condition.

Of WOUNDS.

A Wound is a solution of continuity made in a soft part by any external cause. All instruments, or any thing else that is capable of making a division in any such part, may be the cause of a wound.

Some things may do it by pricking, others by cutting, others by bruising, others by tearing, and others again by burning. Those instruments that thus divide any part, will make wounds of different kinds, with respect to their size, figure, and direction. There are many other distinctions, of which the eye is the best judge, and therefore I shall omit them all as superfluous.

A simple wound made in the soft parts, requires nothing but its reunion. A compound wound is attended with some accident, which requires a different treatment; as suppose a hurt of the bone. A wound may be attended with a hæmorrhage, pain, inflammations, a fever, convulsions, &c.

Pain may be caused by the imperfect division of the tendinous, nervous, and membranous parts; by a foreign body left in the wound, and by the falling of some humour on a membranous part. A *hæmorrhage* may proceed from the opening of a large vein or artery, and is of bad consequence, when it is seated in a part that no application can reach. *Convulsions* may be caused by hurts of the nervous parts, and from the dividing of an antagonist muscle. It may also proceed from a great loss of blood. A *palsy* may proceed from the division of the nerve belonging to any particular part, or from the cutting in two of a muscle or its tendon. An *inflammation* may be produced by any thing that hinders the free circulation of the blood in the small vessels. This in wounds may have several causes. A *fever* is the constant attendant of violent pain, and may also happen when the wound is about to suppurate.

By the sight we may discover the external greatness of a wound, and the loss of substance: and by the finger or a probe we may discover the direction; we may judge of the extent of a wound, by the hurt of the action of
any

any part ; and sometimes from the excrements that proceed from the wound.

The *prognostics* of wounds may be taken from their cause, their situation, and their essential difference. Those of the teguments and fleshy parts are less troublesome than those of the membranous, aponeurotic, and nervous parts ; as for instance, the joints. Wounds of the external parts are less dangerous than those of the internal. Those of the principal trunks of the vessels, than those of the branches, where the hæmorrhage may be readily stoppt. Wounds in the internal parts are very dangerous.

Slight wounds are of the skin, fat, and muscles, for they require nothing but their reunion. *Grievous wounds* are those of the membrane, aponeuroses, and tendons ; particularly the joints, as before taken notice of. *Mortal wounds* are those of the vessels and internal parts ; wounds of the heart are almost always mortal ; wounds of the lungs are sometimes curable.

Wounds made with a cutting instrument, are not so bad as those with a small sword. Those made with a blunt weapon, are worse than either of the former. When a wound in the head is attended with convulsions or the staggers, it shows the brain is hurt ; or if the skull is fractured, and any part of it depressed, the same symptoms will happen, both which cases are commonly mortal.

Wounds have four stages ; the *first* is while it bleeds ; the *second* is while it is suppurating ; the *third* is while the flesh is growing again ; and the *fourth* is the time it takes in healing.

The *first* stage is when the lips of the wound are open, and get at a distance from each other, by their own proper elasticity ; whence proceed the hæmorrhage and pain. Though gun-shot wounds seldom bleed. When the division is simple and without loss of substance, we have nothing to do but stop the bleeding, ease the pain, and bring the lips of the wound together. Thus these have but one stage. Wounds with loss of substance may bleed for hours, unless prevented by a proper dressing ; during the first five

or six days, it grows moist by little and little, and emits a reddish serum, which becomes more plentiful as it approaches the second stage. The approach of the suppuration is usher'd in by feverish symptoms, which are proportioned to the largeness of the wound. The swelling will go down in proportion to the increase of the suppuration, and ceases entirely when this is quite finished. The remains of the divided vessels, and the stagnating juices, are the cause of the suppuration.

In the *third* stage the nutritious juices of the part, can easily come as far as the lips of the wound, and cover the extremities of the divided vessels, to repair the loss of substance. In the *fourth* stage, when the wound is filled up with new flesh, the surface of the wound begins to dry from the edges, and form a pellicle called a cicatrix, which is different from the teguments of the rest of the body.

Nature carries on the cure of a wound in the manner just mentioned, and art removes all impediments out of the way, by bringing the lips together by particular operations, by promoting the suppuration, by removing any thing that may prevent the regeneration of flesh, and promoting the formation of a cicatrix, and by preventing all accidents as much as possible, that may retard any of the intentions of nature.

The cure of a wound must be begun by the removal of all the strange substances, such as clotted blood, earth, sand, &c. which would hinder the closing of the lips of the wound, and consequently hinder their reunion. The lips of these sorts of wounds are to be brought together with the fingers, and they are to be kept in that situation, by such methods as the situation of the wound will allow, as bandage, agglutination and futures. When the wound is not deep and happens on the limb, a bandage will serve to keep the lips together, which must be left to the ingenuity of the operator. When it is in the parts about the head, the dry future will be sufficient. When the wound is deep in the muscular parts, a real future must be made use of.

The future is an operation which by the means of a needle and thread, or two or three together, bring together the lips of a wound, and keep them together till they are perfectly united. The needle must be crooked, and of a size sufficient to compass the wound: with this you must enter the flesh at a distance from the lips, almost equal to the depth of the wound, or the stitches will be apt to cut through the flesh, or when the lips are drawn together, there will be a hollowness left at the bottom, where matter may lodge and do a great deal of mischief. Waxed thread is better than silk, because it rots more easily, and is not so apt to cut. One stitch in the middle is sufficient for a wound of two or three inches long; and where wounds require more stitches, they may be at an inch distant from each other; or if the wound be deep, somewhat farther.

Horses are so apt to burst the stitches when they get up or lie down, that this operation should be omitted, unless the wounds are large and gaping, or lacerated and torn. Wounds that enter the cavity of the body, should always be kept open with a tent or dossil, armed with a digestive of turpentine; honey and the tincture of myrrh, or the tincture of myrrh and aloes alone. The tents or dossils should be soft, loose, and very short, when they are put into the wounds of the fleshy parts, which it is not convenient to stitch up; for when they are long, they are apt to breed sinuous ulcers, and foul the bones and sinews in those of the joints. Indeed it would be well if these sorts of things be always avoided, because they hinder in some measure the filling up of the wound with good flesh, and more so, when they are crammed in hard; besides causing other bad accidents.

When a wound is deep, and does not penetrate inward to the bones, it will be best to make a counter opening to prevent an abscess; but if it penetrates obliquely downward, a bandage will be proper if the part will allow it to be used. When this cannot be done, it will be proper to use an injection with tincture of myrrh and aloes. But if the abscess is already made,
and

and has continued some time, the injection must be of a sharper nature, such as this which follows.

Dissolve half an ounce of Roman vitriol in a quart of water, and pour the water gently off into a large bottle. Then add half an ounce of camphorated spirit of wine, with the same quantity of sharp vinegar; shake them together, and then add two ounces of the Egyptian ointment, shaking it as before.

Four ounces more or less of this, according to the capacity or depth of the abscess, should be injected with a syringe that has a pipe, that will reach pretty near the bottom, when the wound will not admit the body of the syringe itself, as they seldom will those that are large. When this has less'n'd the discharge, and brought it to a better consistence, it may be used once a day, and then once in two or three days. The matter should first be squeezed out from below or upwards, when the situation of the abscess renders it necessary.

Contused wounds of the joints should always have a pledgit laid over them, spread with the common digestive, and bound with a roller of broad tape or list. Before which, and when the wound is open'd, bathing it with spirit of wine, will be very proper. When you perceive any little abscesses lie under the skin, they must be snip'd with the scizzars to let out the matter, to prevent its corroding the ligaments.

In all the joints, but more particularly the knee, great care must be taken to prevent inflammations and fluxions; and when they are already begun, these symptoms may be abated by the following fomentation.

Take the tops of lavender, rosemary, thyme, sage, camomile flowers, wormwood, bay-berries, and juniper-berries of each an ounce; of water two quarts and a pint: boil them a little while, and then strain off the decoction; to which add a pint and a half of common proof spirit.

Some put two ounces of pot-ashes, and as much sal ammoniac into a decoction of this kind; but I can't pretend to say what great advantage it can be of. This fomentation

fomentation is good in all bruises and punctures of the legs, especially where the wound is dry and does not run: and it will be the more necessary, because these sorts of accidents are often attended with the most violent pains. This liquor must always be made hot at the time of use, and a flannel cloth must be dipt in it, wrung out, and apply'd five or six times, one after another when they begin to cool. This must be repeated morning and evening, till the wound begins to digest; and after the first small appearance of matter the danger is generally over. This method is likewise exceeding useful for the swelling of the plate vein after bleeding, and to stop the mortification sometimes brought on by rowelling.

The cure of small simple wounds is easy performed by laying on dry lint first, and then tow upon that; or the lint may be dipt in *friar's* balsam and laid on, and then if there is any bleeding it will soon stop. When a large vessel is divided, and the bleeding or hemorrhage is great, it will be best to apply slices of puff ball, or agaric of the oak, called touch-wood or spunk, and nothing else will be wanted for that purpose.

In *Gun-shot wounds* the bullet must always first be extracted if possible; but when it has pass'd quite through the limb, it seldom wants any thing but the pouring of spirit of wine into both orifices, and then a short tent arm'd with turpentine, honey, and tincture of myrrh. It ought always to be remember'd, that spirituous medicines and bathing with them always agree best with these sorts of wounds. Profuse bleedings, if the vessels can be come at, may be stop'd as above. If not, inject the royal tincture, to be had at the chemists in London, with a syringe that has a pipe of sufficient length. Both orifices must be kept open, till the wound is fill'd up with sound flesh. When there are any splinters of the bone, or it is become foul, the wound must be enlarged with a sponge tent, or an instrument. But then these cases are always dangerous.

When there is a symptomatic fever, it must be cured with bleeding, laxative glysters, scalded bran and water gruel.

Burns

Burns of gun-powder may be cured by binding common salt thick on the part, and letting it continue for twelve hours; this will either prevent a blister, or dispose it to heal soon. And so will bathing it with rectified spirits of wine for an hour or longer, and afterwards once a day. If the burn is very great, make a poultice with salt, soap and spirit of wine, and apply it to the parts. When it is attended with a great swelling, lay on a poultice made with milk and elder flowers. When there is proud flesh, mix two drams of red precipitate with an ounce of yellow basilicon to bring it down.

Of ULCERS.

AN ulcer is a solution of continuity in a soft part, for when it affects the hard parts, that is the bones, it is called a caries. It may arise from an internal as well as an external cause, and generally succeeds an abscess.

With regard to their dimensions they are distinguish'd into great and little, deep or superficial. With respect to the place, if they are deep, they are called cavernous; when they are attended with a carnosus excrescence, they are termed ulcers with an *hyperfarcosis*. When they are surrounded with hardness and callosities, they are called callous ulcers; when the ulcer is inveterate, sinuous and callous, it is termed a fistula. They are also called varicous when attended with varices of the veins.

When they are joined to any other disorder, they have their name from thence; thus they may be said to be inflamed ulcers; painful, tumified, or ulcers with a caries. With regard to the matter that flows from them, they may be sanious, sordid, virulent, or verminous. The sanious ulcers abound with a serosity or *ichor*. Sordid ulcers send forth a thick sanies of different colours, as black, livid, ash-colour'd, and the like. A virulent ulcer is full of a limpid corrosive matter. The verminous ulcers produce animalcules, or small worms.

The causes from whence they proceed, give a different denomination to ulcers. Those that succeed wounds and open abscesses, and whose cause is only local, are said to be well conditioned or benign. When they proceed originally from any disorder of the blood, they are called malignant. Cancerous ulcers are of the very worst kind.

The causes of ulcers are of two kinds; the one internal, the other external. The internal proceeds from a depravation of the nutritious juices, or they are hindered from flowing to the extremities of the vessels, and without these the ulcers can never be incarned and cicatrised. Remedies designed only to consume fungous excrescences continued long on wounds, or after the opening of an abscess; dressings perform'd with an improper *Apparatus*, such as tents, dossils, pledgits, canulæ, &c. And other things improperly applied may be the external causes of ulcers.

Ulcers attending particular distempers already mention'd, I shall now pass by; varicous ulcers are known by the varicous dilatations of the veins round about them. A sanious ulcer may be distinguish'd from others, by a large quantity of sanious matter which colours the compresses black. A fistulous ulcer is generally straiter at the entrance than at the bottom, and the sides are hard and callous; verminous and fungous ulcers are evident to the sight, A cancerous ulcer has hard elevated reverted edges, and is soon filled up with fungous sanious flesh, and a stinking corrosive *ichor* proceeds therefrom, which eats by degrees into the flesh, and forms sinuosities on every side. The veins of the tumour are dilated and varicous, and the ulcer itself has a very disagreeable aspect.

The prognostic signs of ulcers are taken from their causes, and the parts in which they are seated; the more difficult it is to determine the cause of an ulcer, the more dangerous it is: simple superficial ulcers are attended with little or no danger, unless the blood is greatly vitiated. But when the edge rises above the surface, and grows callous, they are not soon levelled, in such a manner as to be fit for cicatrization. An ulcer with a
caries

caries of the bone is much more difficult to manage than a simple ulcer; and this is more or less, according to the place where the ulcer is seated, and to the good or bad state of the blood; as well as the causes from whence it proceeds. Cavernous ulcers are not so dangerous as sinuous ulcers, especially when the sinuosities terminate near a joint. Fistulous ulcers are still more dangerous, because they are often seated near the joints and other dangerous places, which render horses of little use when the cure is compleated. Malignant or putrid ulcers are always dangerous, because they are a sign of a vitiated blood; and when they have a carrion smell, with a large discharge of stinking ill coloured matter, they generally end in a mortification. Cancerous ulcers are the worst of all, only they do not terminate so suddenly, but will suffer a horse to languish a considerable time before they kill. Varicous ulcers which are seated among the blood vessels, are spongy and hard to digest, being full of a bloody ichor. These are very difficult to cure. But a simple varicous ulcer may be cured with great facility.

The cure of ulcers in general need not be largely insisted on, because, besides those already treated of, the poll-evil, fistula on the withers, the glanders, and quitters will be mentioned in distinct sections.

A simple ulcer needs only be brought to the state of a clean wound, and then it may be treated as such, by incarning and cicatrising applications. In order to perform this, it will be necessary to lay the ulcer open if there be occasion, that its whole surface may be cleansed and deterged. This may be done with tincture of myrrh and aloes, and with yellow basilicon, and red precipitate. Also with two ounces of turpentine and honey, mixt with a dram of Verdigrease. When the ulcer is deterged, it may be incarned with lint alone, provided the matter is laudable; if otherwise a vulnerary balsam may be spread on lint and applied. But no tents must be used, because they retard the cure, by preventing or destroying the sprouting granulations of the good flesh, or produce callosities. Deep ulcers

should be kept open by filling them with lint; lest the lips should close too soon, and prevent the dressings from reaching the bottom. When the cavity is filled up with good flesh, it will be best to cicatrise with dry lint or *Frier's* balsam. If there should be any inequalities, they should be taken down with blue vitriol, powder of myrrh, burnt alum, red precipitate, &c.

When proud flesh is to be consumed, four ounces of yellow basilicon, to half an ounce of red precipitate is a good proportion; but it may be made stronger or weaker just as you please.

Fistulous ulcers besides being considerably deep, have generally a callosity, which must be removed before they can be cured. This must be performed with a knife or escharotics. The best of this last kind, though known to few, if any, is verdigrease ground with gum water, and made up into a tent, that may fill the cavity of the fistula, and in three or four days time you may take it out, and it will bring out the callus along with it, and a laudable matter will be left behind. But in order to perform this, the orifice must be first enlarged with a sponge tent. Or if you choose, and it is practicable, lay open the *fistula* to the bottom with a knife; then make a mixture with equal parts of turpentine, myrrh, the yolks of eggs, and Egyptian ointment, and incorporate them well together. By repeating this dressing at due intervals, the bottom will be deterged, and then the parts must be brought together, and united by compression gradually from the bottom upwards.

In ulcers attended with a caries of the bone, the opening must be enlarged, and an exfoliation must be procured, by applying a brush pencil dipt in a solution of quicksilver in *aqua fortis*. Or the lamella, or outward part of the bone may be perforated with a triangular *terebra*, so as to make many small holes, which must be drest with dry lint or balsam, by which means the repullulating vessels of the sound part of the bone will grow up through the holes, throw off the dead scale and renew the periosteum. This is better than
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the raspatory, and the cautery. If the caries reach the marrow, it must be perforated with a trepan; if the caries is on the spongy head of the bone in the joint, it is incurable with regard to the horse, for then the limb must be cut off.

Putrid ulcers are always accompanied with a cacohymy of the fluids, and therefore proper internals must be given at the time of the cure, to destroy the malignity of the humours; such as an equal quantity in weight of cinnabar, of antimony, and gum guaiacum; an ounce of which must be given every day. If old ulcers are dried up, they will either break out in another place, or the matter of them will fall upon some noble part, which may prove fatal; therefore there should always be a rowel to drain the humour off by that outlet, otherwise it is best to let it alone. Besides these things, the horse should have gentle laxative purges between whites, with warm water gruel, and and feeds of scalded bran.

When the callous lips of ulcers are very obstinate, three ounces of quicksilver should be kill'd with a sufficient quantity of balsam of sulphur, and then mixt with half a pound of gum ammoniac, or diachylon; a plaister made with this should be laid on the ulcer, and renewed morning and night. The ammoniac is best, because it is more emollient. Then make incisions in the callus, so as to penetrate through their whole thickness; then employ more of the same plaister, laying it on the naked incised lips. The scarifications are to be repeated every third or fourth day till they are quite destroyed, not forgetting the mercurial plaister.

Varicous ulcers must be amended with an astringent decoction of oak bark, pomegranate rind, of each an ounce; roch alum and white vitriol of each half an ounce, boiled in three pints of vinegar to a quart; the ulcers must be fomented with this twice a day. This will thicken the discharge, and at length dry it up. Afterwards lay on the strengthening plaister of the shops, to contract the coats of the veins that fed the ulcer.

Cancerous ulcers sometimes attend the farcy and the glanders ; and sometimes there are cancerous warts, which degenerate into true cancers. Sometimes rowels likewise put in near the glandulous parts, will turn to the same kind of ulcers ; then they leave a knotty uneven swelling, with a stinking ichor, which increasing will turn to a true cancer and kill the horse. These sorts of ulcers are only to be cured by extirpation, and then there is no warranting the success, and therefore the less there is said about them the better ; that none may be tempted to throw away their money for an operation that may only hasten the death of the horse.

Of the GLANDERS.

THE glanders are known by a running of matter from the nostril, which is either yellow, or greenish, or tinged with blood. When the disease is of a long standing, the matter turns blackish, and becomes very stinking. It is always attended with a swelling of the glands, or kernels under the jaws.

La Fosse by examining the carcases of horses, and making a diligent scrutiny into the seat of the disease, has found it to be local, and placed in the pituitary membrane, which lines the partition along the inside of the nose ; the cavities of the cheek-bone on each side of the nose ; and the frontal cavities above the orbits of the eyes, while every other part of the body may be free from any disorder.

There the glanders are properly an inflammation of this pituitary membrane, and may be distinguished into three different periods, the beginning, middle, and the end. The first is called the *incipient glanders* ; the second the *confirmed glanders* ; and the third the *inveterate glanders*. The three principal symptoms are the inflammation of the pituitary membrane ; the swelling of the glands under the jaws, and the running, which gives the name to the glanders. The inflammation
causes

causes the swelling of the glands ; and the ulceration of the glands causes the running of the nostril on the diseased side.

La Fosse in order to be certain that he had found out the seat of the disease, injected a certain liquor into one of the nostrils of a sound horse, which inflamed the pituitary membrane ; this was attended with a swelling of the lymphatic glands on the same side ; this inflammation produced ulcers, which caused a running of the nostril as in the glanders. An injection into the other nostril of the same kind, produced the like symptoms on both sides.

He affirms that these lymphatic glands do not empty themselves into the mouth as in men, but into the nostrils ; and the matter of the simple glanders is not sinking as is commonly asserted, unless some other distemper, as the strangles, or the farcy, has affected the horse at the same time.

This is an infectious disease, and horses often catch it from one another ; Besides any thing that inflames that membrane will bring on the glanders. Thus if a horse after swimming is left in the cold, or if his nose is exposed to the wind, in two hours time the glands under the jaws will be swell'd, and the nostrils fill'd with a viscid matter.

Therefore to prevent these diseases from sudden cold, the horses after being heated should be led about in the hand that they may cool gradually ; their noses should be covered to hinder the sudden ingress of the cold air, and their tails should be turned towards the wind. When the glands of a horse have been affected for some time, though there is no cough, and he is possessed of every other sign of health, yet he may properly be said to have the glanders. In this case emollient decoctions must be thrown up the nostrils, so as to reach the frontal sinuses or cavities, and to repeat it three times a day for a week. If the running continues after this has been performed, it will then be necessary to use fumigations, which are the smoak of medicines thrown upon a red hot iron.

For this purpose *La Fosse* has made use of a kind of box with a tube fix'd thereto, which may be convey'd up the nostril of a horse, and will convey the vapour to the intended part.

The glanders in horses has a very great resemblance to the *ozæna* in men, though in these the cause is generally more virulent as proceeding from the French disease: at first the ulceration affects the internal membrane of the nostrils, and then it extends itself by degrees into the sinusses of the skull and cheek bones, producing an incurable caries. When this happens in the cavity of the upper jaw over the grinding teeth, it is called *Ozæna in antro*.

I mention this disease in men, to show what medicines are most likely to succeed in the glanders in horses, because similar disorders require a similar treatment; especially as *La Fosse* has been quite silent about it. Therefore inwardly a horse should have plenty of the decoction of guaiacum wood, with now and then two drams of *mercurius dulcis*, made into a ball with any conserve and liquorice powder. For an injection, mix three grains of green precipitate, with half a pint of spring water. The fumigation may be made with cinnabar thrown upon a red hot iron, and conveyed into the nostrils with a pipe after *La Fosse's* method, though it had been practised upon men long ago. The cinnabar upon the hot iron must be stirred now and then with the end of a pipe to make it all evaporate.

But we may observe that all liquids that are useful to deterge ulcers, will be proper for injection in this case, while the disease is recent. But the best injection that I know of to abate the corrosive sharpness of the ulcerating humour, is that which follows.

Take quicksilver and balsam of capivi, of each half an ounce: and when they have been rubbed together so long that the quicksilver intirely disappears; then add the yolk of an egg, which being intimately mixed with the balsam, add by degrees half a pint of spring water.

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Sometimes lime water with mercurius dulcis may also serve for the same purpose.

Gibson, though he was mistaken in thinking this disease was caused by a scrophulous disposition of the glands has said enough to shew the true seat of the disease, and its catching nature shews that there is something more in it than can be attributed to disorders from colds; and therefore it cannot be of so innocent a nature even at first as *La Fosse* would have us believe. *Gibson* has observed from dissections that the glands on the inside, that in their natural state are exceeding small, and covered with a fine delicate membrane, are all greatly enlarged; insomuch that the passage of the upper part of the nose was choaked up as if it had been with a piece of sponge. That the *Septum Nasi*, and all the bones and cartilages were turned carious and spongy; in which it resembles exactly a confirm'd *ozæna* in men.

In some cases the injection will not go high enough to reach the cause of the disorder, and then the best way will be to take out a bit of the bone with a trepan; after which the cure may be compleated by injections in the same manner as the *ozæna in antro*, which may be with tincture of myrrh mixt with honey of roses. But care must be taken that the perforation does not grow up till the cure is compleated. Likewise any of the former injections may be used when judged to be necessary. This is the only method of cure when the glanders are inveterate.

All runnings at the nose are not the glanders, though often so called. One may proceed from an ulceration of the lungs, and then it may be called the *pulmonary glanders*, and then it is a whitish liquor coming away in lumps or grumes. The second sort may be called the *wasting glanders*, and it seizes horses at the end of diseases caused by hard labour, and affects the lungs. Then there comes away a whitish humour tinged with yellow; they eat and drink pretty well, but continue to lose their flesh.

The *Strangles Glanders* throws humours upon the lungs, which nature is not able to discharge, and forms

abscesses; these humours are carried out through the nostrils, and by coughing through the mouth. The *Farcy Glanders* which affects both the lungs and the pituitary membrane with a corrosive humour, is still worse than any of the former. The three first are not infectious, but this last is.

A fifth sort is a discharge which arises from sudden cooling, after being over heated, and may turn to the true glanders as *la Fosse* observes. The last kind that he mentions is the discharge occasioned by the strangles; for though this disease commonly goes off by an abscess which breaks; yet sometimes it is discharged by the nostrils, with a short cough and a slight inflammation of the jaws. Though sometimes the nostrils will run without any swelling at all. But in the cure of all these different glanders, which are falsely so called, except the farcy-glanders, regard must be had to the principal disease in the cure; of which we have already treated.

Of the POLL-EVIL.

THE poll-evil is an abscess near the poll of the horse, formed in the sinuses, noll-bone, and uppermost *vertebræ* of the neck. It is known by the swelling of the poll, which is sometimes so large that it reaches down towards the vives, and when it breaks spontaneously or is opened, it discharges great quantities of slimy matter, not unlike dirty size.

It generally proceeds from blows or strains, or hurts in drawing; or from a critical translocation of matter in a fever. When the poll swells from a blow or bruise, it may be easily cured by fastening an ear-band to the collar, to prevent its pressing on the part, and bathing it two or three times a day with warm vinegar, and if there is an oozing through the skin it must be mixed with an equal quantity of spirit of wine. In this state the abscess may be prevented by this means. But when there

there is a heat in the part with inflammation, it will be proper to bleed, and then apply a poultice with white bread and milk, or the following.

Take of the crumb of white bread eight ounces; of white hard soap an ounce; of milk a sufficient quantity: boil them together a little, and then the mixture will be fit for use.

This must be repeated once or twice a day till the itching is gone, and the swelling abated. This method with laxative physic may prevent an abscess; but when it is formed, bleeding and purging are unnecessary, and it must be brought to a head with a poultice made with rye flour and oatmeal, made pretty thick with strong ale or beer, and then brought to a proper consistence with ointment of marsh-mallows. It will be best to let it break of itself, and then the matter must be squeezed out gently once or twice, after which it may be laid open, keeping as much as possible according to the direction of the fibres of the muscles, without cutting the tendinous ligament if it can be avoided; I mean that ligament that runs along the neck under the mane. And therefore, if the matter is gathered on both sides, the best way will be to open it on both sides.

This done, a leaden probe must be introduced as gently as possible, and by that means the orifice must be made so wide as to introduce the finger; or it may be better done with a short sponge tent, and a bit of dry sponge will do well enough for this use, without any preparation. If the matter is white, and of a good consistence, it may be heated with turpentine, honey, and the tincture of myrrh. When proud flesh arises, you may strew a little ground red precipitate thereon.

But if the matter is of a bad colour, and consistence like melted glew, there will be need of a second incision but not too deep, and the wound should be widened with the finger. Then it should be searched with a leaden probe to see whether there are any drains, and to see how far they reach. If they go but a little way, the common dressings with a little addition will do; but if they go deep between the interstices of the muscles,

cles, they must be laid open with a knife, taking care to avoid the tendons.

In these disorders, tinctures are always preferable to greasy ointments, such as the tincture of myrrh and aloes, friers balsam, &c. *Gibson* directs the following mixture.

Take rectified spirit of wine and white wine vinegar, of each half a pint; of white vitriol dissolved in spring water half an ounce; of tincture of myrrh four ounces: mix them together and shake the bottle every time it is used.

Heat a little of this in a ladle, and then soak tow in it to wash the wound with; after which fill it up with tow moistened with the same; but it must lie very loose, lest it should hinder the growth of good flesh. Sometimes bathing it with this liquor alone will do, if you fill it with dry lint, and cover it with tow to keep it from the air. In some cases once or twice a day may be necessary, till the running decreases and the sore seems to grow better. Then the sore should be bathed with spirit of wine alone, and it should be covered with tow dipt in vinegar and whites of eggs beat together, which will serve instead of a bandage. This should be covered with a piece of woollen cloth, with two loops of list round his ears, and it may be tied underneath by the means of tape fastened thereto.

When the ulcer is very foul it may be cleansed with phagedenic water, made with two drams of corrosive sublimate, and a pint of lime water; and then it must be filled with loose dossils of tow dipt in Egyptian ointment and oil of turpentine made hot.

But the shortest way of curing this disease is by scalding with the following mixture:

Take corrosive sublimate, verdigrease in fine powder, and Roman vitriol in powder of each two drams; green copperas half an ounce; of Egyptian ointment two ounces; oil of turpentine and train oil, of each eight ounces; of rectified spirits of wine four ounces: mix these together in a bottle for use.

Some make it milder by using red precipitate instead of corrosive sublimate, and white vitriol instead of Roman vitriol; others use linseed oil instead of train oil; some again mix half an ounce of verdigrease, half a pint of train oil, oil of turpentine four ounces, and oil of vitriol two ounces.

The ulcer must be first cleansed with a sponge squeezed out of vinegar; then put some of the mixture into a ladle with a spout; and when it is made scalding hot, it must be poured into the abscess, and the lips must be closed together with a stitch or two according to the size. This must remain several days, and if good matter appears it will soon be cured, with bathing it with spirit of wine. If the matter is bad and in plenty, it must be scalded a second time or oftener if necessary. This method is most proper when this disease proceeds from a fever or a surfeit.

Of a FISTULA in the WITHERS.

THIS disorder generally begins on the top of the withers, and is small at first, but it soon increases and spreads on both sides, often reaching down to the shoulders and afterwards towards the neck, which imposthumates and turns sinuous, unless taken in time. Sometimes it is confined to one side only, though the other may be a little swelled. It may proceed from bruises of the saddle or the poll ~~evil~~ in the same manner as in fevers. When it is caused by a bruise it is not dangerous, and may be repelled with safety. When it breaks on one side only, and the swelling on the other subsides, it may be cured in the same manner as any other abscess. If in both sides between the spines the cure will be difficult. That between the sinuses of the lowermost rack-bones is of a very bad kind, and if cured causes a deformity. When there are several sinuses that communicate with each other, the cure is generally impracticable.

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When the swelling is caused by the saddle or a blow, bathe it with hot vinegar; if that fail, mix half an ounce of white vitriol with a quart of vinegar: but the vitriol must be first dissolved in water. This will reduce small swellings in a short time. When the swelling is hot, or when little hot watery pimples arise, there is an ulcerous disposition, which may be prevented with the following mixture:

Boil two ounces of sal ammoniac or a handful of wood ashes in a quart of water: then pour off the clear, and mix with it half a pint of spirit of wine.

Bathe the eruption with this first, and then anoint it with linseed oil to soften the skin. Aqua fortis may be applied once in two days, but then it burns off the hair and makes the swelling turn to a quaggy ichor, which will cast off sloughs and abate the swelling, leaving a scar with a little baldness. Oil of vitriol will do the same; or white vitriol mixt with vinegar and spirits of wine.

When this tumour is the consequence of a fever it must never be repelled, but ripened with ointment of marsh-mallows mixt with a little oil of turpentine; or a poultice made with a pint of rye flour, six ounces of hogs lard, four ounces of ointment of marsh-mallows, and four ounces of oil of turpentine, mixed and warmed in a pipkin. The swelling must be always covered with a cloth under his body cloth till it breaks.

The abscess should break of itself, or at least be very ripe before it is opened, which may be known by its softness. It may be opened with a hot iron, small at the point, but neither round or sharp. Empty the abscess and put in a leaden probe and discover which way it turns, that you may open it still farther. This opening should be made downward from the orifice a little slanting as far as the hollowness reaches, which is best done by a half round firing iron made hot. This may prevent a fistula. When there is an abscess on the other side, it may be opened in the same manner, and when there is a communication between both it may be preserved by a perforation through the withers, taking

taking care to avoid the ligament which runs along the neck to the withers.

Some of the ulcers will fill up with the use of turpentine, honey, and the tincture of myrrh mix'd with red precipitate, and bathing the sore all round with rectified spirit of wine. But when the ulcer is foul and the matter of a bad colour, with fungous flesh, then the following mixture will be proper.

Dissolve a quarter of an ounce of Roman vitriol in half a pint of water, oil of turpentine and rectified spirit of wine, of each four ounces; of white wine vinegar six ounces; oil of vitriol and Egyptian ointment of each two ounces.

Mix these together, make them scalding hot, and soak pledgits in it to apply to the ulcer; as often as it is dressed it must be bathed with the following mixture:

Take spirit of wine and vinegar, of each a pint; of oil of sulphur two ounces. The oil must be dropt in by little and little to prevent too great an effervescence.

There is no material difference between oil of sulphur and oil of vitriol, so that you may use which you please. The pledgit should be laid in the ulcer as loose as possible, and when it fills up with sound flesh, lint alone will do, or pledgits large enough to cover the whole sore, armed with the common digestive and mixt with a small quantity of precipitate. When the ulcer is sinuous, the sinuosities must be laid open and dressed as before; when it is a true fistula, its sources must be destroyed with a caustic or a hot iron.

When the bones are foul, inject equal quantities of tincture of myrrh and tincture of euphorbium, bathing the sore all about with the preceding mixture. This disease may likewise be cured with scalding as in the poll-evil.

Of STRAINS of the SHOULDERS, KNEES, and PASTERNS.

A Fresh strain in the shoulder may be easily known by the horse not putting out that leg like the other, that is, not so far, and by his endeavouring to favour it. When it proceeds from humours and affects both shoulders, he stumbles as he goes along.

Sudden lamenesses of the shoulders may be cured by dissolving half an ounce of bole armoniac, or French bole, in a pint of good vinegar; and bathing the part with it two or three times a day, from the wither almost to the knee, and half way up the breast, letting the horse rest a few days, till he is well. If the horse is lame without a swelling; then

Take of the best vinegar half a pint; spirit of vitriol and rectified spirit of wine, of each two ounces; of French bole half an ounce: use it as the former.

When the shoulder is much swelled and relaxed, then fomentations will be necessary.

Take of the tops of rosemary, lavender, and worm-wood, of each an ounce; of camomile flowers half an ounce; bay-berries and juniper-berries, of each an ounce and a half; of crude sal armoniac four ounces; of salt of tartar two ounces: boil them in two gallons of chamber-lye.

Take a quart of this fomentation, and mix it with half a pint of spirit of wine and foment the horse's shoulder with it with pieces of flannel large enough to cover it all over. The liquor must be made hot, and the flannel applied as usual. Beside this, it will be proper to make a rowel in the point of the shoulder, and there will be no doubt of a cure.

The STRINGHALT may be cured with frictions and fomentations, without any farther trouble.

Strains of the Knees and Pasterns, may be cured with poultices made with rye flour, the grounds of beer and chamber-lye. When the swelling and inflamma-
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tion is abated, bathe the parts twice a day with the following mixture :

Take vinegar a pint, of camphorated spirit of wine four ounces ; of white vitriol dissolved, in a little water, two drams : this will strengthen the horse's knees and pasterns.

Of STRAINS in the COFFIN-JOINT, BACK-SINEWS, and HOCK.

THE *Strain of the Coffin-Joint* is not readily known at first, because the horse does not favour that foot, except he plants it on the ground, but in time it will become so stiff, that he will only touch the ground with his toe ; nor will the foot play with the hands. Blistering and firing will cure this disorder, unless it has been of too long standing.

The *Strain of the Back-Sinew*, is a common accident, and generally proceeds from hard riding in bad roads. In this case the sinew will swell, sometimes from the backside of the knee to the heel ; and then the horse does not care to put his foot even on the ground, but sets it before the other while he is standing.

There is nothing cures this disorder so soon as the vinegar, and French bole lately mentioned. It must be made warm and rubb'd into the sinews often in a day. And if any weakness remains, a mild blister will compleat the cure, and bring down the sinew to its natural state.

Strains in the Hock, are easily cured, when taken in time, by bathing them with coolers and repellents, as in other recent strains. But when the ligament is hurt, they must be well plied with fomentations, and then there will be no danger of success. If the callosity or hardness grows only on the outside, it may certainly be removed by repeated blistering. But if the callosity is on the inside it will be necessary to fire the part very gently, making lines pretty close together, and then apply the following charge :

Take

306 *Of the DISEASES of HORSES,*

Take of the plaister of gum ammoniac with mercury, to be had at the shops, six ounces; melt it with a little linseed oil to make it a little softer, but not too soft, and apply it like a charge over the hock, and when it is fallen off, renew it once or twice more.

When there is a hard scabby sore or crack in the bending of the hock, it is called the *Sallenders*, and when there is the same in the bending of the knee, it is termed the *Mallenders*. These first are to be washed, after the hair is clipped off, with a lather of soap in chamber-lye, and then lay on the mercurial ointment of the shops spread on tow. This should be repeated night and morning; or

Take ethiops mineral half an ounce; of white vitriol a dram; of soft green soap six ounces: incorporate them well together in a mortar, and apply as before.

Either of these used with care, will be sufficient; though some make a strong liniment with two drams of corrosive sublimate, and two ounces of hog's lard.

Of LAMENESS in the STIFLE, WHIRL-BONE, and HIP.

WHEN a horse is lame in the stifle, he generally treads upon his toe, and cannot set the heel to the ground. Sometimes the stifle swells pretty much. Cooling applications, such as were used for the shoulder, will succeed very well, unless the swelling be large and puffy, and then the fomentation must be used. When there is an abscess which breaks and runs, it will terminate the disease.

Lameness of the whirl-bone and hip, may be cured, when they are discovered in time; otherwise the cure is very uncertain. At first the horse discovers but little lameness, or scarce any at all in his walk, unless he comes to trot, and then he drops backward upon his heel.

The cause of the lameness may lie either in the muscles

cles or the whirl-bone of the hip, which at first may be removed with coolers and repellers so often mentioned. They should be used at least four or five times a day. But when this disorder is confirmed, we must use blistering and firing, which may remove the lameness so far as to leave only a limp, that will not hinder his going through business. Rowels in this case have done more harm than good.

Of NARROW HEELS, BINDING of the Hoof, and SAND-CRACKS.

NARROW HEELS are generally natural defects, and are often rendered incurable by bad shoeing. The best method is to hollow the foot in shoeing, and to pare nothing out but what is rotten or foul. When the foot is hard or dry, or inclinable to be rotten, bathe often in chamber-lye, or boil two pounds of linseed in chamber-lye to the consistence of a poultice, and then add six ounces of soft soap, and anoint the foot every day with this, and put a little upon the foal. Or,

Take six ounces of fresh butter, two ounces of bees wax, one ounce of tar, and as much linseed oil as will bring it to a smooth ointment.

Binding of the Hoof, is when it is so small about the instep that it turns the hoof into the shape of a bell. The cure of this is by making seven or eight lines, with a drawing knife from the coronet almost to the toe. The lines must penetrate almost quite through the hoof, but not quite reach the quick; and keep it charged with pitch till the lines are quite worn out with shoeing, which will require several months; and therefore many turn the horse out to graze till the feet grow down, tho' some are able to travel in a few weeks.

Horses sometimes have old nails and other sharp things run into the tender parts within the foal. When this is the case, after taking them out the part must be bathed with warm oil of turpentine and spirit of wine, and pledgits with basilicon should be laid over it by way of

of stopping. If it turns to an ulcer, and discharges foul stinking matter, and proud flesh arises thereon, the dressing must be made with honey, Venice turpentine and Egyptian ointment; first strewing precipitate on the fore.

A *Sand-Crack* is a little small cleft on the outside of the hoof. When it penetrates through the horny part of the hoof, and runs directly downward, it is not easily cured. When it passes thro' the ligament which unites the hoof with the coronet, it is apt to breed a quittor or a false quarter, which are very dangerous. When the crack penetrates through the hoof without touching that ligament, it may easily be cured by rasping the edges smooth, and applying thick pledgits of yellow basilicon, and binding them down with soft list or a piece of very large waxed packthread bound round it like a hoop. But if there is a hollowness under the hoof, and the cleft seems to be ready to penetrate through the cartilage or ligament, it had best be fired directly with irons moderately hot; but both sides of the cleft are first to be rasped thin, and that gradually on each side to some distance. This done the horse should be turned out to graze till the foot is well.

La Fosse has lately discovered that the coronary bone is often crack'd into three pieces, and sometimes from slight accidents. But as this is incurable, it is only a caution for people not to throw away their money in attempting a cure. He does not pretend to give any symptom to discover it, but only in general says, it is a lameness that draught horses are most subject to.

Of a QUITTOR, RUNNING FRUSH, and CANKER.

A *Quittor* is an ulcer formed between the hair and the hoof, commonly on the inside quarter of a horse's foot. It is dangerous when the hoof is hollow near that part, or the blood vitiated. But while it continues on the outside of the hoof, it may be easily managed. The coronet must be bathed all round every day, with spirit of wine, and the fore must be dressed with

with yellow basilicon, mixed with red precipitate, in the proportion of an ounce of the former to two drams of the latter.

But when the matter gets under the hoof, there is no way of coming at it but by taking off part of the hoof. This must be done very carefully, and judiciously, and then the cure will not be difficult. When the ulcerous matter is got so near the quarter, as to make it necessary to be taken off, the cure can only be palliative; for when it grows again it leaves so large a seam as to weaken the foot; but he may serve pretty well for a draught horse afterwards.

A Running of the Frush or trush, is an imposthume that gathers in the frog of horses that have fleshy heels, and have deep clefts in their frogs. Those that have clean dry frogs are seldom troubled with such accidents: They are sometimes attended with the grease.

When the abscess appears, the hard part of the frog must be pared away, and whatever appears rotten. Then the bottom of the foot must be washed two or three times a day with old chamber-lye; which will serve for the present, for it is very apt to return.

When there is a great flux of humours upon the part, it is apt to turn to a canker, which we must endeavour to prevent by applying the following mixture.

Take vinegar and spirit of wine, of each two ounces; of tincture of myrrh and aloes an ounce; of Egyptian ointment half an ounce: mix them together, and bathe every part that appears moist: and lay tow dipt in the mixture over the ulcer, in the manner of stopping.

Then the horse should be purged with laxative physic, and two or three diuretic doses mentioned in the next section.

When a frush becomes rotten and putrid, it is apt to degenerate into a *canker*, especially when it is got into the sinuosities of the coffin-joint. Sometimes it may proceed from bruises, corns, and nails.

The canker sometimes makes so swift a progress, that it will turn the muscles of the foot to a quag in one night's time, and rot the foal at the same time. The quick

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quick growth of fungous flesh that appears in these sores requires the strongest applications. Aqua fortis or oil of vitriol should be applied every day, and then we may get ground of this disease, even though it reaches the coffin-bone; for though the muscles of the foot are quite wasted with the canker and the cure, yet they will grow again, and the horses will at length have a better foal than before. When the canker does not rise while the dressings are used, once in two days will be sufficient, and sometimes a little red precipitate and burnt alum, will be necessary to strow on the growing flesh, till the foal begins to appear. The hoof should not only be cut off in all places where it presses the tender parts, but should be kept soft with linseed oil, and every time the foot is dressed, it should be bathed all round with chamber-lye. He should have two or three doses of laxative physic, at proper intervals, when he is come to his stomach. When the foot is firm and strong, a little working will do the horse good.

Of the GREASE, CROWN-SCAB, and RAT-TAIL.

THE *Grease* is a disorder generally known, and affects horses of a gross constitution, through the carelessness of those that look after them. For keeping the limbs clean and dry, is a great preservative against this disorder. In bad cases the horse's blood is very poor, which inclines him to dropical disorders. This causes a swelling of the limbs first, and then the eruptions appear afterwards, which discharge a stinking matter somewhat like melted glue. Sometimes the grease breaks out before, sometimes behind, and when the constitution is very bad, it falls into the fore limbs at the same time.

When the heels are first observed to swell, while the horse stands in the stable, and goes down upon exercise, order him to be well cleaned when he comes in, and washed with soap-suds, chamber-lye, or vinegar and water, which with sufficient rubbing will often prevent or remove the complaint.

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The intention is to brace up the fibres, strengthen the vessels, and so to prevent the afflux, or rather stagnation of the blood and humours; which may be done with bathing them with old verjuice, or by dipping rags in the same, and rolling them on with a proper bandage; and by this means in a few days, the parts may recover their tone.

There is another way of keeping down the swelling, though not brought into practice, and that is a laced stocking, which any sensible taylor or sadler is capable of making, on the swelled part. It should be made of strong canvas that will not easily tear when put to the trial. However the part may be washed pretty often with the following repellent lotion:

Take half an ounce of camphire, and dissolve it in four ounces of rectified spirits of wine; an ounce of white vitriol with as much water as will just dissolve it. Mix these together, and then add six ounces of white wine vinegar. Shake the bottle every time it is used.

When the cracks and scratches begin to ooze, and run, the hair must be clipped away, to make the grieved part more easy to come at; as also when there are hard scabs. When the disorder has proceeded thus far, it will be proper to use poultices with turnips or with rye flour, turpentine, and hogs lard mixt with spirit of wine. And when his limbs begin to be more limber, he must be purged several times with due intervals between, remembring always never to give strong physic. After a few days the common digestive ointment so often mentioned may be laid over the part, and the poultice upon that; which may be made only with boiled turnips, lard, and a handful of powdered linseed. When a running is procured by this means and the vessels are unloaded, the sore may be dried up by the following wash:

Take of lime water a quart or three pints; white vitriol and burnt alum of each two ounces; of the Egyptian ointment an ounce. Mix these together, and wash the sores three times a day with a sponge dipt in the mixture. If you would have it

it more drying and astringent, dissolve a dram of sugar of lead in every ounce of the mixture.

Sometimes a drying ointment may not be improper.

Take of red lead two ounces; of verdigrease an ounce; reduce them to a fine powder, and mix them with four ounces of honey.

What has been said hitherto, will serve to cure this disease when it is local, but if the legs are very much swelled, and are *penfeathered*, that is, when the hair stands staring up, with a running of fetid matter from deep sores, the cure will be difficult.

When the disease is in this state, the blood is always poor, and therefore must not be begun with bleeding as some direct; but the impure serum must be in some measure carried off by diuretics.

Take a quart of clean forge-water, and mix it with four ounces of yellow rosin, and an ounce of salt petre ground well together; then add a dram of unrectified oil of amber. This is a dose to be given in a morning fasting.

He must be kept fasting two hours before and after this drench, and then he must have cold water with moderate riding. But as this is very disagreeable to some horses, the following balls may be substituted in their room.

Take of salt petre two ounces; of filings of iron half an ounce; of camphire a dram. Make them into a ball with a sufficient quantity of honey, washing it down with a horn or two of smith's forge-water.

When there is any remains of the humour, the leg may be bathed with spirit of wine and vinegar in equal parts. If this is not sharp enough a little Egyptian ointment may be mixed with it. But if the heels continue scabby and dry, use the following ointment:

Take yellow basilicon and honey, of each two ounces; of verdigrease in fine powder, three drams: mix them. Let this be applied once a day till the cure is effected.

When any weeping remains, the above ointment with

with red lead may be laid on the part, like a poultice spread upon tow, and renewed once in three days. When the diuretick balls are not powerful enough, they may be assisted with equal parts of cinabar and gum guaiacum, giving him an ounce for a dose every night and the diuretic ball; sometimes omitting this last as you shall see occasion.

Rat Tails generally creep from the pastern to the middle of the shank, along the *tendo achilles*, or master sinew. They are so called because they resemble the tail of a rat. Sometimes they pass along one side of it, and are generally dry, but now and then moist. The following ointment will not only cure these, but *scratches*, *kibes*, *figs*, and the like disorders.

Take soft soap and black basilicon, of each two ounces; of linseed oil an ounce; of white vitriol, in fine powder, half an ounce: mix these well together, and dress the part with it every day, wiping it clean.

The *Crown-Scab*, is a humour that breaks out round the coronet, producing a scurfiness and itching. It may be cured with a mixture of ointment of marsh mallows, and yellow basilicon, spread upon tow and laid round the coronet, giving the horse at the same time a few doses of the above diuretick drink, and a laxative purge or two, of which you will find several prescriptions interspersed in this treatise.

Before I make an end of this treatise, it will not be amiss to take notice, that we have recommended *puff balls* and *agaric of the oak* more than once for the staunching of blood, not as a new discovery, but as better than any other way, tho' we did not then know that it had been made use of for that purpose in horses. However, we find that *la Fosse* had tried the powder of puff-balls in some cases, some of which he has since published. In *France* they call them *Vesse-de-Loup*, which is the same that botanists call *Lycoperdon*. His method was to apply some of the dust to the bleeding artery, and to keep it on with the palm of his hand for about twelve or fifteen minutes, and then the blood stopp'd. He cut off the leg of a horse and applied the powder with a bladder to the stump to keep the powder on

without any other dressing, and the blood stopp'd. By other experiments he found that when the wound came to suppuration, it did not renew the bleeding. Therefore we conclude that the powder of the puff-ball and the agaric of the oak are safe remedies for the stoppage of large hemorrhages, which proceed from wounds, amputations, or otherwise; and that they are attended with no bad consequences or dangerous accidents.

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A P P R O V E D R E C E I P T S.

The Rye-bread Drink.

TAKE a large slice of brown or rye-bread, two ounces of flour of brimstone, a quarter of a pint of honey, with a sufficient quantity of ale to make a drink. This may be repeated and given to horses in the strangles, or a day or two before physick, being both opening and cooling.

A Diuretic Ball for the GREASE.

Take of Venice turpentine, sal prunella, flour of brimstone, of each one ounce: make them into a ball. This is a very moderate ball, and should be washed down with a quart of ale, that has had one pound of onions steep'd in it all night. You may give this once in four days, and by repeating it, it will clean a horse's legs wonderfully, and in some cases will do without physick. But to make them thoroughly clean, I would advise purging after it. To a coach horse you may give it for two or three days successively.

A comfortable Drink for a COLD.

Take flour of brimstone, aniseeds, diapente, of each
two

two ounces ; of saffron in powder, a dram and a half ; Venice treacle two ounces ; honey three ounces : make them into a drink, with a quart of ale, and give it warm in the morning fasting, adding two ounces of sweet oil just before ; keep your horse warm all that day.

For the MALLENDERS.

Take of red precipitate an ounce ; of vitriol two ounces ; of Egyptiacum three ounces : mix them together, and make an ointment ; and, after clipping off the hair, roll on the size of a nutmeg.

A good Ointment to cleanse Wounds and heal them, and to keep down proud flesh. It is also good for crack'd heels when they grow dry, and the scabs make the horse uneasy by their heat before they fall off.

Take the apostles green ointment, and apply it to the heels, til the cracks are healed and the scabs quite gone.

Balls to carry off the remainder of the humours, if the legs swell after physick.

Take common antimony, flour of brimstone, diapente, of each a pound : moisten this with a sufficient quantity of honey, and cold-drawn linseed oil, just enough to make the powders roll. Give a ball of this every morning, for five or six days. If this don't do, rowel him.

A Liniment for a Sprain in the Back Sinews.

Take oil of turpentine and the best spirit of wine, of each an ounce and a half ; of oil of spike an ounce ; of caput mortuum of vitriol an ounce ; of dragon's blood two drams ; of oil of origanum a dram and a half : mix them well together, and rub some into the part.

An Ointment for a Shoulder Sprain.

Take nerve oil and hog's lard of each a quarter of a pound ; two spoonfuls of tar, three quarters of an ounce of sublimate mercury, finely powdered, ten cantharides powdered. Put the nerve oil and hogs lard into an earthen pan over the fire till they are just boiling ; then add the mercury and flies, and let them just boil ; and then take the mixture off the fire, and stir it till it is quite cold.

How to use it.

Take the bigness of a walnut and rub it well into the part with your hand: Let the horse stand three days without stirring. The more it swells the better, if the horse walks well after three days rest; then rub his shoulder with train oil, stroking down the hair with your hand. If the horse is not cured with the first dressing, at three days end, use it again.

A Blistering Charge.

Take black pitch and rosin, of each two ounces; Venice turpentine, mastic, euphorbium, and cantharides in powder, of each an ounce. Incorporate these properly, but mix the last when almost cold; then add two drams of aqua fortis very gently, and you may add one ounce of dragon's blood.

A common but useful Ball for Horses that have flying humours.

Take common antimony, flour of brimstone, anniseeds, and liquorice, of each four ounces, all in fine powder, and made into balls with four ounces of honey; of oil of anniseeds four drams; of linseed oil cold-drawn a sufficient quantity, to make them into balls.

The Apostles Ointment.

Take turpentine, rosin, yellow wax, gum ammoniac, of each an ounce; the roots of long birthwort, oblianium, and bdellium, of each six drams; myrrh and galbanum, of each half an ounce; opoponax and verdigrease, of each two drams; litharge, nine drams; of oil of olive, two pounds; of vinegar as much as is sufficient to dissolve the gums, and make the whole into an ointment. This is an excellent oil to cleanse foul sores, and is much used for wounds, cuts, and crack'd heels. It is likewise the best ointment to dip rowels in.

An Ointment for the SPAVIN.

Take of Venice turpentine, two ounces; of hogs lard one ounce; of spirit of turpentine, half an ounce; cantharides and euphorbium, of each half an ounce; both in fine powder: set them over the fire and stir them all together till they are cold.

A Poultice

A Poultice for GREASY HEELS.

Take honey, hogs lard, and turpentine, of each a pound; of rice meal a sufficient quantity: simmer them all together over the fire, and then put a pound of beaten alum fine sifted, to the rest when cold. Spread it on a cloth, and apply it to the heels, and let it lie on twenty-four hours.

A Drink for the GREASE.

Take liquorice powder, elicampane-root, flour of brimstone, aniseeds powdered, of each an ounce; of rue an handful, and one head of garlick: boil these in a quart of ale till it comes to a pint; then add a pound of common treacle and three ounces of oil of turpentine. This is to be given once in four or five days. Bleed the horse on the day you lay on the poultice, and give the drink the next day. Keep him very warm, and walk him gently in a dry place.

A Drink for the YELLOWS and STAGGERS.

First bleed at the mouth or tail, and then give three drams of saffron; turmerick, aniseeds, of each half an ounce; of London treacle three ounces; dissolved over a gentle fire in a pint of sack, or white wine: mix them together.

Balls to carry off GREASE.

Take aniseeds, fenugreek seeds, liquorice root, wild saffron, carthamus, flowers of sulphur, of each an ounce; jalap, senna, myrrh, gentian, of each half an ounce; of cream of tartar, two ounces: beat all to powder, and add juice of liquorice dissolved in white wine an ounce: make a mass with fresh butter for twelve balls. Give three after a heat.

For the FARCIN.

Take lapis calaminaris, tutty, of each one ounce; sal tartar, half an ounce; rue one handful, shred very fine: boil all the drugs, being finely powdered, in a pint and a half of urine to a pint, keeping it stirred. Strain off the liquor and let the horse fast ten hours before, and ten hours after he has taken it.

A Poultice for a Strain in the FETLOCK-JOINT.

Take one pint of vinegar; wall-flower, agrimony,
P 3 groundsel,

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groundsel, parsley, mallows, of each one handful; and a small quantity of hog's grease. Chop the herbs and boil them well together. Apply it as warm as the horse can well bear it poulticewise.

A Cold Charge.

Take the whites of eggs, bole armeniac, sanguis draconis, white wine vinegar, verjuice of each a sufficient quantity, oil of roses and myrrh, of each two ounces: mix them and thicken it with flour.

For a Prick with a Thorn.

Take violet leaves, agrimony, of each half a handful; boars grease or fresh grease a sufficient quantity; and make a poultice with barm.

A Salve to make the Hoof grow.

Take Burgundy pitch, common turpentine, bees-wax, oil of earth-worms, of each four ounces; melt them together and anoint the part betwixt the hair and the hoof once in twenty-four hours. If the horse be pain'd in his feet, stop them with kitchen-stuff and brine, boiled together and thickened with yeast.

A Poultice for the STRANGLES.

Take mallows and chickweed, of each half a handful; white lily roots and fenugreek in powder, of each a sufficient quantity: boil them with hog's grease and the lees of strong beer, applying it very hot.

An Ointment for SWELLED LEGS, SCABBY HEELS, and CRACKS.

Take verdigrease four ounces, boiled in four pints of ale, till it becomes thick like an ointment which will be when one third is wasted. Anoint the part twice a day and keep the horse out of the water.

An Ointment for sore CRACKS in the HEELS.

Take of litharge of gold, a sufficient quantity; of unguentum album camphoratum, as much as you please, and a little linseed oil. Mix them.

A Tent for a QUITTOR-BONE.

Open the hoof to the vein against the place that is quittered;

quittered; then run an iron red hot into the hole of the quitor about an inch or half an inch; then put in a piece of tow with spittle and dipt in sublimate; then let it rest three days and take it out, turn it inside out and put it in again; let it rest three days longer, throwing cold water on the foot once a day for the three last days. Then take the tent out and pluck the quitor out; after it has done bleeding dress it with the following ointment once in twenty four hours for five days.

Take green copperas, unslaked lime, of each equal parts, with a fourth part of salt. Make them into an ointment with crown-soap and fresh grease. When this has been apply'd, heal the sore with healing ointment, and wash it with copperas water.

A Drink and Plaster for the FARCY.

Take of rue, one handful; savin, bear's-foot, of each half a handful; two or three shives of the inward bark of a walnut-tree, and boil them in four pints of chamber-lye to two pints; add to the strained liquor, bole armeniac one ounce and a half; oil of turpentine half an ounce: give it in the morning, letting the horse have no water till night, and then let it be warm. The plaister is made of pigeon's dung finely powdered and dried two handfuls, tar one pound, white mercury two ounces, apply it to the part and heat it with a hot iron.

An excellent Oil for STRAINS of the SINEWS, and SHOULDER-SLIPS.

Take linseed oil, four ounces; oil of spike and turpentine, of each two ounces; of nerve oil, an ounce and a half; oil of Exeter, of swallows, of each an ounce; oil of peter, six drams; oil of vitriol two drams and a half. Mix them together for use.

A Purge for a young Horse.

Take of Barbadoes aloes one ounce; cream of tartar half an ounce; of jalap half a dram: mixt with solutive syrup of roses. Make them into a ball, and give it in a morning fasting in warm water.

An Ointment for a very sore Back.

Take mercury sublimate in fine powder, two ounces ;
P 4 of

of soft soap two ounces ; oil of bays one ounce : mix these very well together, and keep the mixture close in a pot. When you make use of it take the bigness of a nutmeg of the ointment, and rub it very well in with your fingers, and for a quarter of an hour ; and forty-eight hours after rub on the same quantity.

N. B. Put a piece of bladder on your fingers, and use it with great caution, for it is a most dangerous poison.

An Ointment to take out a THORN.

Take of the best turpentine one ounce ; beat it well with the yolk of a new-laid egg ; then add a spoonful of the best virgin honey and a spoonful of the finest wheat-flour : mix all these well together and spread the mixture on leather, to the thickness of a poultice and lay it on the sore ; repeating it once day.

For a SURFEIT or a COLD.

Take two pints of ale, boil and scum it ; and then add two or three heads of garlick well bruised : boil them till a third part of the ale is consumed, and then put in bay-berries beaten or bruised small with an ounce of diapente, of elicampane root, half an ounce ; London treacle one ounce ; of honey four spoonfuls ; of fallad oil, six spoonfuls : boil them together and strain off the liquor for a dose. Ride the horse after he has taken it for some time ; then cloathe him up well and warm. At noon give a marsh or the white water ; repeat this drench every third day, and give white water every day, if the horse be feverish or full of blood, bleed him between the drenches. You may make a gentle purge of this drench by adding six drams of aloes in powder.

An Ointment for a SHOULDER-SLIP.

Take nerve ointment, two ounces, and mix with it spirit of sal armoniac, one ounce ; then add camphire, two drams, dissolved in two ounces of spirit of turpentine : to these add an ounce of oil of swallows, mixt with two ounces of oil of spike, and two drams of oil of origanum. With this mixture anoint the shoulder.

For an Inflammation of the EYE.

After sponging the eye with warm blue milk and
water

water for half an hour, about six o'clock apply the following water, observing to shake the bottle.

Take camphire, half a dram, dissolved in brandy half an ounce; of soft mountain wine an ounce; of rose water three ounces: mix them. This should be applied with a compress of linen cloth, three or four times double at going to bed, and let it lie all night.

A Cordial Drink for sudden falling down of humours by an over-heat.

First bleed plentifully, then take of saffron two drams; mithridate and aniseeds of each an ounce; of liquorice powder half an ounce; of honey three ounces: mix them in white wine for a drench.

An easy and gentle Purge.

Take of Barbadoes aloes an ounce; cream of tartar half an ounce; jalap two drams; oil of aniseed fifteen or twenty drops: make them into a ball with fresh butter, and give it about eleven o'clock in the morning. When he comes in from water give him a mash in the evening, and it will work well the next day.

Work it off with warm water.

For swelled Legs and the BLOOD SPAVIN.

Take Roman vitriol and alum, of each four ounces; of bay salt one pound; of euphorbium, two ounces: powder them, and boil in urine, brandy, and white wine vinegar, of each two pints till one third part be wasted. Warm the liquor and with a sponge bathe the horse's legs twice a day for two or three days; then let him rest as long, and bathe them again. This is good for a blood-spavin at first coming.

For a CANKER.

Take of plantane water two pints, and spirit of vitriol, two ounces mixt together. Bathe the canker with this.

The Copperas-water to dry up a Sore.

White copperas three ounces, and boil it in two pints of water till it is reduced to one.

Green Ointment for Wounds.

Take rosin and wax, of each the quantity of a walnut : melt them together, and add hog's grease and honey, of each a spoonful ; melt and stir them well together, and then add of common turpentine two spoonfuls. When it is dissolved take the mixture from the fire, and put to it verdigrease in powder, one ounce : stir them and set them on the fire till the mixture begins to simmer but not boil. Take it off and strain it through a cloth.

N. B This ointment will also cure the poll evil and fistula, but wash the wound with the copperas water first.

An Ointment to ripen an Abscess.

Take boar's grease, hog's grease basilicon, of each three ounces ; oil of bays two ounces ; dialthea an ounce. Rub the swelling every day with this ointment, made warm when you use it.

A Charge to strengthen Sinews and for Swelled Legs.

Take oxycroceum, paracelsus, Burgundy pitch, of each of equal parts : stir them together over a gentle fire till they are well melted and mixt ; then take the mixture off and add eight or nine Spanish flies or cantharides powdered : apply it to the part, clapping flocks upon it, and let it fall off of itself.

For a FOUNDERED HORSE.

Take of sheep's suet or hog's grease one pound, two or three handfuls of wheat bran, and make them into a poultice with one pint of white wine vinegar. Apply it very hot all over the foot, and renew it once in two days.

For an Over-reach in the HEEL.

First cut it out, leaving no hollowness about it ; and wash it clean with vinegar and salt ; then boil butter and salt together, and clap a cloth dipt in it scalding hot to the place two or three times together. After this wash it with copperas water. If it does not skin, dress it once in twenty four hours with flocks dipt in turpentine, and the white of an egg beaten together.

For

For a Watery Humour in the EYE.

Take of May dew or rain water, four ounces ; a small piece of white copperas held between a pair of hot tongs, and dropt into the water ; then beat the water with the white of an egg till it comes to a froth, with which wash the eye.

To take away WIND GALLS.

Take of linseed oil half an ounce ; brandy or spirits of wine, half an ounce ; oil of turpentine fifteen drops : mix them together : bathe the part with this mixture, and heat it in with a hot iron twice a day two or three days together.

For shrunk SINEWS.

Take rosemary, ~~costmary~~, sweet marjoram, camomile flowers, and sage, balm, mellilot, of each one handful, boiled in two pints of oil and one pound of fresh grease. When the mixture is almost boiled, put in a quart of black snails and apply it like a poultice to the part.

A Mixture for the MANGE.

Give hempseed and flour of brimstone in the horse's corn, till he hath taken half a pound of the brimstone, and two or three quarts of hempseed ; then wash him with tar one pound, roch alum four ounces ; bay salt one pound, tobacco dust, black soap, oil of turpentine, of each half a pound ; brine and chamber lye of each four pints mixt together.

For a dry COUGH.

Take elicampane, aniseed, sulphur, juice of liquorice, white tartar, of each three quarters of an ounce, mixt with Barbadoes tar to the consistence of an electary. Give the horse the quantity of a small walnut morning and evening before water.

A Balsam for the SCRATCHES.

Take of the plaister called flos unguenorum ; slice it into a skillet and put in double the quantity of lard : melt them over a gentle fire and stir them with a stick till the mixture is cold. Spread this on large pledgits of tow or linen, and bind it on the heels. This is
to

to be renewed every morning, and if the heels run much every night. The horse must have a gentle purge first, and then cinnabar balls.

HOOF SALVE.

Take common turpentine, dog's grease, honey and juice of elder leaves, of each four pounds boiled to a thick salve.

A PURGE.

Take of Barbadoes aloes, one ounce ; salt of tartar and jalap, two drams, thirty drops of chymical oil of aniseed, and one nutmeg made up into a ball with syrup of buckthorn.

For the YELLOWS and STAGGERS.

First bleed at the mouth, and in six hours after bleed in the gascoin vein plentifully : then give two drams of saffron, turmerick, aniseeds in powder half an ounce ; London treacle, three ounces : boil them over a gentle fire in a pint of sack, ale, or white wine.

Another for the YELLOWS.

Take of feseefew, celandine, the inside of berry-bark, one handful of each : put them into two quarts of ale, and boil it till it comes to one quart, then strain it from the herbs, and put into the liquor a quarter of an ounce of saffron, two ounces of London treacle, and two ounces of turmerick. Make it boil a little, and give it the horse luke-warm. Repeat it in two days if need be.

For the FARCIN.

Take lapis calaminaris, tutty, of each one ounce ; salt of tartar, half an ounce ; rue, one handful shred very fine : boil all together in a pint and a half of urine to one pint. Let the horse fast six hours before and four after taking it. Keep it stirred while boiling, and give it luke-warm.

A PURGE:

A PURGE.

Take myrrh, cream of tartar, of each three drams ; one dram of saffron ; one ounce of Barbadoes aloes ; three drams of oil of aniseeds, and treacle sufficient to make it into a ball. Roll it in liquorice powder.

Balls to be given after Hunting to carry off HUMOURS.

Take Barbadoes aloes, polo-sanctus, colocintida, jalap, gentian, of each two ounces ; diapente, liquorice, aniseed, sugar-candy, of each four ounces : myrrh, cream of tartar, of each one ounce ; syrup of horehound and roses, of each one ounce ; London treacle three ounces : make it into a paste with honey or treacle. The quantity of a large walnut to be given after hunting : keep him warm, and give him white water at night.

For the MANGE.

Take hempseed and sulphur, of each half a pound : mix them together, and give the horse one ounce of it every morning in his corn, until all is taken ; then wash him with tar, one pound ; tobacco dust, black soap, oil of turpentine, of each half a pound ; brine and chamberlye, of each four pints. Wash the horse well with it twice a week, in the place where he rubs himself. Warm it when you use it.

Useful BALLS for Coughs and Asthmatic Disorders.

Take of flour of brimstone, half a pound ; of elecampane-root, four ounces ; scenugreek seeds, cummin seeds, aniseeds, juniper berries and garlick, of each two ounces ; of linseed oil cold-drawn, six ounces ; honey and tar, of each four ounces ; of balsam of sulphur made with oil of turpentine, an ounce ; of syrup of coltsfoot, four ounces. Make these into balls of the size of a pullet's egg, one of which is to be given in a morning fasting for sometime, intermitting now and then a day or two.

An Ointment for Greasy Heels.

Take white vitriol, roach-alum and white lead, of each half a pound ; of green copperas, three ounces ;
of

of verdigrease, an ounce: Reduce these to a fine powder, and then add of oil of vitriol, an ounce; of honey half a pound, and with a sufficient quantity of train oil make a soft ointment.

Diuretic Balls proper in the Grease and several other Distempers, where purging by Urine is required.

Take of Alicant, Castile, or common hard soap, a pound; of stone brimstone in fine powder, half a pound; of cinnabar of antimony, two ounces; sal prunella and nitre, of each four ounces; of balsam of sulphur, an ounce. Make these into balls of the size of a pullet's egg, and give one to the horse in a morning on an empty stomach, and let him fast two hours after it.

A Cordial Ball for Colds and Coughs.

Take of raisins stoned, half a pound; juniper berries, turmeric, aniseeds and scænegreek seed, of each two ounces; myrrh, gentian, and anisated balsam of sulphur, of each an ounce; of saffron, two drams; honey and syrup of coltsfoot, of each six ounces; of liquorice powder, half a pound. Make them into a mass for balls with a sufficient quantity of wheat flour, and keep it in a pot covered for use.

A Liniment to make the Hair grow again.

Take equal quantities of honey and pigeons dung, and mix them well together. Rub this mixture well on the part every other day.

A Powder for Fevers.

Take of hartshorn shavings, half a pound, and boil them in spring water for upwards of an hour; then take them out and lay them in a dish before the fire, till they are dry enough to powder. After they are powdered, mix them with an equal weight of antimony in powder: Put the mixture in an unglazed earthen pan over a slow fire, and keep it stirring with an iron spatula to prevent its caking together, and when it has quite done smoaking, take it off, and you will have an ash-coloured powder. If you would have it more white put it into a red hot crucible, and calcine it for some time.

This

This process is originally in Tournefort's *Materia Medica*, p. 182. and has been given by some pretenders to physic, to cure fevers in men. But its operation is too rough for that purpose, and generally does more harm than good. However, it is safe enough for horses, and may be given to two drams, made up into a ball with honey and liquorice powder. It is good in all kinds of fevers, but more particularly in the inflammatory and malignant. When it is given in the morning it may be repeated again at night, as also the next day, once or twice more till the fever is gone. The making of this powder is tedious and troublesome, and therefore many no doubt would be glad to hear of a powder ready made, which would have the same effects, especially for horses of great value. Such is the fever powder of Dr. James, whose efficacy is infinitely superior to this in question, and whose virtues are now well known throughout the three kingdoms, for curing fevers among mankind.

A Charge for swelled Legs with oozing of water through the Skin after a Fever.

Take of verjuice, a pint; of currier's shavings, a handful: boil them together till they become thick, and then add a handful or two of fuller's earth. Then take the whites of four eggs, and beat them together with two ounces of spirit of wine with a double quantity of camphire. Mix them together for a charge.

This must be laid to the part fresh every day, and then you must walk the horse about three or four hours, every time the charge is renewed.

The following Account of the Method of curing a Strain of the BACK-SINEWS, and the ANATOMY of a HORSE'S LEG, was communicated by Mr. DALE INGRAM, Surgeon, but came too late to be inserted in its proper Place.

For a Strain called a Clap of the Back-Sinews.

FIRST bleed immediately in the fetlock vein. 2. Bathe the affected leg with the warm blood mixt with salt for half an hour. 3. Foment the leg twice a day with flannels, squeezed out of the following whey made hot :

Take a quart of milk, and when it boils add half a pint of the oldest and the strongest verjuice, in which an ounce of roch-alum hath been dissolved : Let this mixture boil, and you will have a strong curd immediately. Strain off the whey and preserve the curd.

This curd must be applied warm once a day as a poultice after the leg hath been fomented with the whey as directed. It must be bound on with a smooth roller. In about six or eight days the inflammation will be asswaged, and then the following styptic charge must be laid on.

Take of the colcothar of vitriol, reduced into an impalpable powder, half a pound, and mix it by little and little with the whites of two eggs beaten to a glair, adding as much strong verjuice as will bring it to the consistence of a cold charge. Then spread it on a linen cloth, and roll it on with a bandage four yards long and three inches broad, taking care that every turn be very smooth. This charge fresh-made must be renewed every twenty-four hours.

Bleeding is designed to abate the inflammation, which always attends this accident when violent ; to which likewise the whey will greatly attribute. The blood and salt will stimulate and cherish the sinews, and

and consequently prevent any farther flux of humours. The curd is a styptic, and will help to restore the elasticity or springiness of the sinews, and the cold charge will greatly strengthen the limb. Whereas, all oily greasy applications relax and weaken it, and therefore ought to be shunned. This method is likewise much better than a cure by blistering and firing, for this last method especially, is attended with danger, and may do much more harm than good. Besides, experience has shewn the safety and benefit of this practice*.

Of the BONES of the Fore-Leg.

THE bones of the fore-leg and foot are seventeen in number: *viz.* The Shoulder-blade, the Shoulder-bone, the Leg-bone or Cubit, the Shank or Cannon-bone, the seven Interossei of the Shank, the two Sray or Splent-bones, the Nut bone, which may be reckoned two, though here continued as one, the great Pastern, the little Pastern, and the Coffin-bone.

The upper part of the leg-bone is joined to the shoulder-bone, and receives the round heads into its cavities. The lower part is received by four of the superior bones which lie between the leg and shank-bone, and form the knee-joint. The upper and hinder part of this bone, has a very remarkable process and protuberance, which is partly received into a cavity of the shoulder-bone, and is called the elbow. The articulation of these bones in some sense, resembles the human elbow.

The interossei, or small bones between the leg and the shank, are four in the row, and three in the lower. The middle bone of these last, receives the head of the shank, and the two outermost, the two splent or sray-bones. They are not all of the same shape or size, but differ from each other in this respect. They are not spongy, as some have asserted, but compact and solid,

* By this method Mr. DAWKINS's horse was cured, after he broke down on the course at Reading, and many others have since been recovered in the same manner.

and

and they are all covered and tied together by membranous, and cartilaginous ligaments. The use of these bones is to strengthen the knee, and to facilitate its motion. That bone which stands out of the row serves for the insertion of the two muscles, and to determine their action to a strait line.

The length of the leg-bone is about sixteen inches, and that of the shank not more than eleven. There are three bones belonging to the shank, one large and two small. These last are shorter than the other, and are called splent or stay bones. The largest of these bones, which is properly the shank, is joined by the superior part of the middlemost of the three interossei or small bones, and two splent-bones to the other two, one on each side. The lower part of the shank-bone receives the superior part of the great pastern, much in the same manner as the human shank is to the thigh-bone, that is, it receives and is received.

The nut or bridge-bone belongs to the shank-bone, and lies on its internal and inferior extremity. It has an eminence in the middle, which is received into the shank, and at the same time receives the external and internal condyles of that bone. It consists of two parts, and may be divided in the middle.

The great pastern-bone is about three inches and a half in length, and its upper extremity is much thicker and broader than the lower, that it may the better receive the inferior extremity of the shank-bone. Its lower extremity is received by its pastern, and likewise receives the eminence in the middle of the same bone. The little pastern is about two inches in length, and like the former bone, has its upper extremities larger than the lower. This last has an eminence which is received into the coffin bone, which likewise receives the crest of this last bone.

The coffin-bone gives a shape or form to the hoof, and resembles a gorget. It has two depressions and an eminence in the middle, for its more convenient articulation with the little pastern bone. There is an apophysis on each side to keep out the quarters of the hoof, and to maintain its shape sideways, while the body of this

this bone bestows its figure on the fore part of the hoof. There are many small grooves internally on the fore part of this bone, which serve for the insertion of the fibres which compose the great tendon before ; the use of which is to move the hoof or foot forward. But the back sinew is inserted in the hind part.

The explanation of Plate III. page 23. which contains the representation of the bones of the fore-legs, and of the hoof.

- a, a, a, a. The four upper small bones placed between the leg-bone, and the shank-bone.
- b, b, b. The three small bones placed beneath the shank-bone.
- C. The fore view of the shank or cannon-bone.
- D. The back view of the same bone, to shew the splent-bones on each side, marked e, e.
- F, F. The two side views of the same bone.
- g, g, g. The nut or bridge bone.
- G. The great pastern-bone.
- H. The little pastern-bone.
- I. The coffin-bone.
- K. The fore view of the hoof.
- L, L. The other views.

See pages 23, and 24.

Of the MUSCLES of the Fore-Leg taken from a preparation of Mr. Ingram's, and by him described.

From the inferior extremity of the shoulder-bone to the coffin-bone, there are ten muscles which serve to perform the various motions of this limb. The first arises by a large fleshy portion, a little above the joint of the shoulder-bone, with the leg bone, and after the length of a span begins to be tendinous ; then descending on the fore part of the leg-bone, it becomes tendinous, and is inserted by a broad flat tendon about half an inch below the joint into the shank-bone, and may be called *rector cruris*.

The second is a small muscle arising from the inward part of the leg-bone, somewhat tendinous ; and becoming smaller as it runs strait along, is inserted into the shank

shank sideways, a little in junction with the inferior bone of the seven. This muscle directs the side motion.

The third is a large muscle, and arises fleshy from the inside of the shoulder-bone near the former, and running along part of the elbow, goes to be inserted by a strong tendon, into that bone of the seven which stands out of the row. About an inch above its insertion it sends off a round tendon, which passing over the bones of the knee, unites with the tendon of its antagonist muscle. Then passes obliquely over the splent and cannon-bone, and is inserted into the upper part of the great pastern. These muscles serve to bend the leg and shank inward, and to put the great pastern forwards.

The fourth muscle is the antagonist of the former, and arises large and fleshy from the outward part of the shoulder-bone, and descending nearly in a straight line, is inserted into the superior and interior bone not far from the former muscle. This serves to bend the leg inwards and to pull it upwards.

The fifth arises or has its origin near the middle of the leg-bone, and adheres closely to it. It is a membranous flat muscle, and runs over and covers the seven bones of the knee. It sends off a flatish tendon to be inserted into the superior part of the shank or cannon-bone. Its use is to tie the seven small bones together, and by its tendon to give a side motion to the limb.

The sixth muscle rises fleshy and round on the side of the lower extremity of the shoulder-bone near the joint, and growing tendinous a little lower than the middle of the leg bone, passes in a groove over the knee joint to the middle of the great pastern, where uniting with two other tendons, they form one broad large cord, which running over the little pastern and under the hoof, is inserted forward in the coffin-bone. The use of this muscle is to pull forward and render the foot strait: it is the antagonist of the back finew.

The seventh is a muscle or rather a strong broad tendon, which rises from the interior extremity of the leg-bone, and running along the inward convexity of the shank-bone, between the splent bones, is divided into two near the middle, which pass to each side of the bridge bone, to fasten it in its place: afterwards

it sends off on each side a strong tendon, which runs over the great pastern-joint, and then goes to unite with the tendon of the last described muscle, and helps to form the broad tendon before, called the extensor of the foot or hoof.

The eighth muscle arises with broad fleshy portions, partly from the inside of the lower extremity of the shoulder-bone, and partly from the upper extremity of the leg-bone; whence running over the whole length of the leg-bone it becomes tendinous near its joint, and passing downwards over the seven bones to the middle of the shank-bone, it is united to another tendon.

The ninth muscle, or rather membranous and tendinous expansion, arises from the inferior part of the leg-bone, and passing along not only covers the seven bones of the knee, but serves as ligaments to tie them together inwardly, and then proceeds downward to unite with the former tendon. Being thus united they form one great chord which is inclosed in a sheath, and passing downwards run over the nut-bone, which serves as a bridge to direct its course, and is fastened to it by an annular ligament, under which it moves. Then it runs over the great pastern-bone to the little pastern, where it sends off a tendinous expansion on each side from its external part, which serve to tie together and secure the joint. The tendon itself proceeds downwards, to be inserted into the coffin-bone, where expanding itself again, it covers almost all the interior part of that bone, and forms the inward sole.

The tenth muscle arises from the elbow of the leg-bone, and continues fleshy to the length of a span, when becoming tendinous, it runs near the joint of the knee, and joins the former tendon, helping to form the great chord, which bears some resemblance to the tendo achilles in men. The two muscles with the tendons bend the leg, shank, both pasterns and foot, inward, at the same instant of time. See pages 32, and 33.

N. B. The numbers 1, 2, 3, 4, &c in the plate of the muscles of the foot refer to the same numbers of the muscle, in this description of them. See the Plate, page 32.

Of

Of the Hoof.

The hoof is a horny part, in shape like a gorget, inclosing the soft part of the foot, and receiving others subservient to motion, like a box-case or coffin; and it surrounds the whole in such a manner as will best defend it from external injuries. Its texture is like horn, softer than a bone, and harder than a gristle. It is composed of various spiral fibres which intersect each other crossways, which, forming thin laminæ or plates, are laid one upon another. It is insensible of pain, and therefore very proper for the purpose for which it is designed. In all countries where the roads are rough, they fasten iron shoes to this part with nails; but in some parts of North America they never shoe their horses at all, because the soil is loose and sandy. The hoof is near a quarter of an inch thick, and yet the heels are more firm, hard, and thick than the hoof, they being ordained to support and strengthen the quarters.

The quarters are a continuation of the heels, and running up to the frush form the superior edge of the coffin; they are supported inwardly on each side by two prominent cartilages. All these contribute to the strength of the foot, and enable the horse to tread securely on his toe and the ball of his foot. Now as the heels are the support as well as a part of the quarters, they should never be pared down, because it not only weakens them, but brings the quarters flat to the ground, and consequently brings the foot into a new position, straining the inward tendons which are inserted in the coffin bone, and throwing the toe upwards, which must needs be painful to the horse. Besides, as the heels are hard and bony, the shoes should never come near them, much less lie on them, because they are strong enough to support themselves, without any artificial addition. Add to this, that they are farther supported and strengthened by two bone-like stays or props, which arise from each side of the frog, running up and joining the heels: and these are defended externally by the outward sole or rift of the foot, under which

which they lie. Now as the quarters of the foot are composed of these stays and heels, the paring away of these last will certainly weaken the stays, quarters, and inward cartilages, and impair the chief support of the body.

The horny sole or rift lies at the bottom of the foot, and is of a much softer consistence than the hoof. It extends from the toe to the superior extremities of the stay-bones, and is joined almost all round to the hoof. Its use is to defend the external and internal soles, as well as the contents of the coffin, from nails, glass, and the like, that they may not wound the more sensible parts. Therefore it must needs be a fault in smiths when they shoe horses, to pare away too much of this rift, because the outward sole is thereby the more exposed to external injuries, and the horse is rendered tender footed.

The internal sole is much more firm and compact than the rift, and whenever this is laid naked, wholly or in part, the foot is very apt to receive wounds or bruises; for the shield of the bottom of the foot being removed, it will be no longer able to resist the impression of hard bodies, such as small stones, and the like. Thus when a horse has cast his shoe, it causes him to limp immediately. Hence likewise may proceed an inflammation and suppuration of the parts within the coffin; for most disorders of this kind proceed from external injuries.

The frog is a spongy, flexible, elastic substance, of a much softer nature than the parts already described. It begins with a point about an inch and a half from the toe, near the center of the foot; and then enlarging, extends itself above the bony heel, where it assumes the name of the frush. On each side of the heel there is a cartilaginous ligament detached from the frush, which extends all round the upper part of the hoof, being the continuation of the frog, and is called the coronary ligament. The skin of the leg is inserted between the ligament and the hoof, and joins the hoof to the foot or coffin-bone. The use of the frog is to keep the heels open, to defend the foot and internal sole from bruises,

bruises, by its elastic and flexible substance ; for by these properties it yields to the pressure of external bodies, and returns to its former state immediately. Hence it appears, that the paring away the upper part of the frog will impair its firmness and stability, will occasion wire heels, and promote the disorder called the Frush, as well as loosen the hoof where it is joined to the skin of the leg. When the frog is almost destroyed, it will be easily penetrated by sharp bodies, and be more liable to be bruised by those which are hard and blunt.

In the coffin box or case which is the inside of the hoof, we observe its coronary convexity, its enchannelled fibres, and the crest like the comb of a cock ; besides three eminences, two furrows, &c. All which are part of the structure of the coffin. This likewise contains the coffin-bone, part of the coronary or little pastern, the extremities of the tendons which bend the foot backwards, and extend it forward, with the two cartilages, the veins, glands, and membranes.

The coronary groove is a concave channel, in the inside of the hoof, and runs round it to the frush. Its use is to contain the enchannelled flesh for the insertion of the skin, to receive the glands, and to facilitate the motion of the foot, as well as to prevent the tendon before from being bruised in its action. Against the hard edge of the groove a great many small fibres run, and there is a strait line down to the toe, or inferior edge of the hoof. From the membranes of the bones between the sides, others run of a more fleshy nature, which help to unite the hoof with the coffin-bone, while the arteries and veins convey nourishment for the support and growth of the hoof.

The crest or cock's-comb in the centre of the coffin, is received into a groove of the coffin-bone, and serves to prevent the shaking of that bone in the coffin, during the motion of the foot.

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